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# Cost estimates for Operation Desert Shield/Desert Storm: a budgetary analysis

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**THESIS**

Cost Estimates for Operation  
Desert Shield/Desert Storm:  
A Budgetary Analysis

by

LCDR J. Andrew Johnson

December, 1991

Thesis Co-Advisors:

Professor William R. Gates

Professor Katsuaki L. Terasawa

Second Reader:

Professor Richard B. Doyle

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Cost Estimates For Operation

Desert Shield/Desert Storm:

A Budgetary Analysis

by

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Lieutenant Commander, United States Navy  
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Submitted in partial fulfillment  
of the requirements for the degree of

MASTER OF SCIENCE IN FINANCIAL MANAGEMENT

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## ABSTRACT

Operation Desert Shield/Desert Storm (DS/DS) presented unique challenges for estimating the cost of that conflict. This analysis reviews the cost estimates and methodologies developed for that purpose by DoD, CBO and GAO. It considers the budget climate and the role of foreign cash and in-kind contributions. Finally, it reviews the budgeting innovations used to provide and monitor DS/DS defense spending.

At the outset of the crisis, costs were estimated to determine the defense funding requirements for DS/DS. Because of the specific provisions of the Budget Enforcement Act of 1990, these estimates focused on the incremental impact on DoD's budget. This was difficult because incremental costs were not defined and DoD's accounting structure does not measure incremental costs.

As allied financial support for U.S. defense expenditures increased, cost estimates were also used to measure the relative contributions of donor countries. This led to debates over the proper definition of incremental costs. Appropriate incremental costs were collected from a budgetary viewpoint, but not from a burden sharing perspective.

Comparing the DS/DS cost estimates and the foreign cash and in-kind contributions, it appears that foreign contributions will cover DoD's incremental budgetary costs, but not the total incremental costs of the war.



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## I. INTRODUCTION

### A. BACKGROUND

The recent Persian Gulf conflict has provided numerous lessons learned for future military operations and resulted in new precedents for cooperation in the world. Operation Desert Shield/Desert Storm also presented unique challenges for military planners and for personnel involved in attempting to develop cost estimates for the conflict.

With the recent dramatic changes such as Soviet political reforms, collapse of the Warsaw pact and apparent growing world support for the democratic process, it is possible that future conflicts will resemble the Persian Gulf crisis. A new American strategy emphasizing the threats of regional conflict was officially presented by President Bush at the Aspen Institute, on August 2, ironically on the same day Saddam Hussein invaded Kuwait. While President Bush was discussing the "new world order," peaceful coexistence, and the United States' role in developing the strategy to support this new concept, Saddam Hussein was in the process of providing an early first test of this new spirit of cooperation.

The Persian Gulf conflict provided a chance to develop procedures and explore opportunities to test world resolve and support for just such a regional strategy. The operation

proved extremely successful and may have set many precedents with regard to cooperation and the sharing of responsibility. The cooperation among countries and the speed at which world resolve was established is a tribute to the leaders involved and has provided many interesting and complex burden sharing questions for the future.

Equally interesting, in view of the unique budget reduction climate in which this conflict developed, are the issues associated with estimating the costs of the war and deciding how it should be funded. This thesis will examine the challenges encountered in developing cost estimates and funding mechanisms for the Persian Gulf war and analyze the methodologies used by various organizations to support decisions on these issues. Operation Desert Shield/Desert Storm provides an opportunity to review the process in which decisions on funding were made and draw inferences about how future conflicts of this nature may be accounted for and funded.

## **B. OBJECTIVES**

This analysis will be conducted by reviewing cost estimates developed by the Department of Defense (DoD), the Office of Management and Budget (OMB), the Congressional Budget Office (CBO), and the General Accounting Office (GAO) and discussing the methodologies supporting these estimates. It will also examine the budgetary concerns that affected the

specific cost estimates provided by these organizations, the methodologies chosen, and the interrelation of these cost estimates with economic principles.

The thesis will discuss the difficulties associated with determining the exact incremental costs of the conflict. In particular, it will examine how current cost estimation procedures either supported or failed to support cost estimation requirements.

This thesis will also review the legislative process to analyze the impact that multi-national involvement and financial support had upon the cost estimation process. This aspect of the thesis is critical in view of the budget climate at the inception of the Iraqi invasion of Kuwait.

## **C. THE RESEARCH QUESTION**

### **1. Primary Research Question**

The primary research question addressed by this thesis will be how did the cost estimates and underlying methodologies used by DoD, OMB, CBO, and GAO support the funding requirements generated from the involvement in the war?

### **2. Subsidiary Research Questions**

The thesis also examines the following specific underlying or subsidiary research questions:

1. Do these cost estimates reflect total or incremental costs of the conflict? Were issues such as

marginal cost, opportunity cost, and sunk cost considered in preparing the cost estimates? Which of these costs should or should not be considered in identifying incremental costs from a budgetary viewpoint?

2. Was there adequate guidance available to all services in order to quickly assimilate incremental costs? How effective was the system of reporting the costs after the fact? Were these cost estimates compared to previous conflicts involving U.S. Armed Forces?

3. How was budgetary incremental costing for DoD departments affected by the Budget Enforcement Act (BEA) of 1990? Were adequate alternative budgeting mechanisms in place to support off budget funding for supplemental military spending requirements (e.g., the Feed and Forage Act procedures)? Was the current appropriation and accounting structure sufficient to finance the war?

4. What are the future impacts of DS/DS on the U.S. economy and budget deficit? Are there future applications for unique funding mechanisms employed during DS/DS?

#### **D. SCOPE, LITERATURE REVIEW, AND METHODOLOGY**

##### **1. Scope**

This thesis consists primarily of a case study comparing the methodologies used by DoD/OMB, GAO, and CBO to estimate the incremental costs of the Persian Gulf conflict. While there will be some discussion of DoD decisions on cost

estimating procedures that were independent of OMB, this thesis will not examine in detail underlying differences in cost estimates within DoD.

In reviewing these cost estimates, the thesis will provide the history of decisions made concerning cost estimates. This is critical to understanding the changes in the budget atmosphere as world support expanded during the conflict.

Although the thesis will compare cost estimation methodologies to ascertain differences or similarities between DoD/OMB, CBO, and GAO, the emphasis will be placed on developing an understanding of methodology and not on establishing the actual cost. However, there will be some quantitative estimation on an aggregate level, to compare estimates developed with different economic principles (e.g., if the payroll costs include only the marginal cost of personnel employed in the conflict, would costs for personnel affected by stop gap measures include the full pay for these personnel or should the opportunity costs of these same individuals be included?).

Reviewing each military department's cost estimate is beyond the scope of this thesis. However, some important generalizations concerning differences between the departments will be discussed. Finally, the span of data and literature review will only proceed through mid-July, when the second FY 1991 supplemental request was forwarded to Congress.

Material associated with the legislative changes and requirements in cost estimation are provided in Appendix A to highlight the significant issues and decisions involved. The reader may first want to review this appendix as it specifies major legislation and other critical financial decisions made during the conflict and relates these decisions to significant events associated with the conflict itself.

## **2. Literature Review**

In conducting the study, cost estimates will be gleaned from government documents and other literature available on the Persian Gulf conflict. Prior to evaluating these documents, extensive review of articles and textbooks presenting the mechanisms for budgeting was completed. This background in the legislative process and economic analysis was critical to recognizing the unique applications of economic principles used during the Gulf war. The review of the legislative process and understanding of it was also necessary to discern the critical changes in the process and their impact on budgetary concerns.

## **3. Methodology**

There are numerous articles, congressional and executive reports, DoD reports, and congressional testimony addressing the actual cost estimates. However, there is insufficient data to develop the in-depth analysis of actual methodologies supporting these cost estimates. In order to



identify the actual methodologies used, a research trip to Washington D.C., was conducted to discuss cost estimation methodologies with key personnel in each organization. The trip identified critical elements associated with cost estimating methodologies which were not apparent from reviewing the literature.

A great deal of research for this thesis, including the research trip, was conducted in conjunction with research efforts for a thesis on the burden sharing implications of cost estimates for Operation Desert Shield/Desert Storm being drafted by LT Brian Hinkley, also at the Naval Postgraduate School. Although the initial base of data is similar for the two theses, the theses take significantly divergent analytical perspectives. This thesis will analyze cost estimate methodologies from a budgetary viewpoint, while LT Hinkley's thesis reviews methodologies from a burden sharing perspective. The synergism that is created by coupling these two theses underscores the criticality of developing different cost estimates for different purposes.

#### **E. DEFINITIONS AND ABBREVIATIONS**

Specific discussions of the Persian Gulf conflict refer to both Operations Desert Shield and Desert Storm and will be abbreviated DS/DS unless the specific issue applies to one operation only.

## **F. ACKNOWLEDGEMENTS**

This thesis would not have been possible without the cooperation of personnel within several agencies. The efforts of CDR Gardner, Ms. Helen Darmara, and Mr. Bob Green from NAVCOMPT, CAPT Julihn, Mr. Dave Tarbell, Mr. Jim Townsend, Mr. Jim Carnahan, and Mr. Robert Shue from OSD, and Mr. Don Guessaman from OMB were instrumental in completion of this thesis. Their suggestions, guidance, and advice in collecting information were crucial in the formulation of the thesis. Also instrumental in the thesis were several budget analysts from CBO and GAO as well as several congressional staff members from the Armed Services and Appropriations Committees in both the House and the Senate. Special thanks to Ms. Linda Schimmel from CBO for her assistance in retrieving voluminous reports which proved to be invaluable in the development of the thesis.

## **G. ORGANIZATION OF STUDY**

Chapter I provides the background and develops the issues addressed in this thesis.

Chapter II discusses the budget climate in place at the inception of Desert Shield and the underlying economic principles supporting efforts to determine the incremental costs of the conflict.

Chapter III discusses the individual cost estimates developed by DoD, CBO, and GAO prior to the ground war, and compares these estimates to costs for previous U.S. conflicts.

Chapter IV discusses the significant legislative and financial events that occurred throughout 1990 and 1991, and their impact on funding requirements. Additionally, this chapter will present the innovative account structures and the unique actions taken to finance the conflict.

Chapter V analyzes the DoD/OMB cost reports produced following the war and identifies the implications of including or not including certain costs. Also discussed are the types of costs estimated and the actual cost data included within these reports.

Chapter VI discusses the impact of DS/DS on future budgetary requirements. Additionally, the possible future uses of the unique funding actions taken during DS/DS are discussed.

Chapter VII provides recommendations and conclusions.

## **II. BUDGET CLIMATE AND UNDERLYING ECONOMIC CONCEPTS**

### **A. GENERAL**

Prior to analyzing the cost estimates developed for DS/DS, it is prudent to review the budget climate in place at the beginning of the Gulf crisis. Additionally, it is useful to examine certain underlying economic principles which apply in any discussion of issues such as incremental costs, total costs, and sunk costs. Many assumptions developed in preparing budgetary requirements utilize these economic concepts as the foundation to estimate costs.

### **B. BUDGET CLIMATE**

The incremental costs associated with the Persian Gulf conflict have been a subject of debate since U.S. Armed Forces were first deployed to Saudi Arabia. These debates continue today. One obvious reason for the continuous scrutiny is the very restrictive budget climate brought on by deficit reduction legislation.

The restrictive climate in which defense spending operates did not arise overnight. Consistently high deficits beginning in the early 1980s and the dramatically changing threat to the United States in the late 1980s dictated a reduction in defense spending. The misconceptions or myths the American public has about defense spending reinforced the demand for

reduced defense spending. Some of these myths are described in the book; "The Defense Revolution." [Ref. 1:pp. 130-167] Perceptions, prior to the crisis, of a greedy and dishonest defense industry, incompetent military spending decisions, and second rate military hardware purchased at exorbitantly high prices, have placed defense spending under constant, microscopic examination and debate. While some of these myths concerning defense systems may have been dispelled by the success of DS/DS, scrutiny of the defense spending has continued.

One visible congressional concern with defense spending was presented during testimony to the Senate Armed Services Committee (SASC) on the FY 1991 defense budget. Senator Nunn, Chairman of the committee, stressed that the defense budget for 1991 was not forward looking enough and failed to take into account changing world conditions. One item specifically mentioned was the increase in funding requirements for overseas construction. It appeared that the U.S. overseas presence would diminish yet funding levels were increasing. In part this can be explained by the rapidly changing world conditions and the fact that most defense budgets are initiated one to two years in advance of the annual congressional budget discussions. However, it was noted that during FY 1992 budget testimony to the same committee, both SECDEF and the CJCS were well prepared to discuss budgeting

and how the defense budget was modified to reflect current U.S. strategies in view of the changing threat to the U.S.<sup>1</sup>

Considering the current budget climate and recent initiatives to reduce overall U.S. Armed Forces and defense spending, the American public accepted President Bush's decision to intervene in the Iraqi-Kuwait crisis with some hesitation. The so called "peace dividend" from defense spending cuts was just over the horizon and was expected shortly. Also, agreement was recently reached on defense spending limits in the five-year budget plan. The agreement capped the FY 1991 Defense Budget at \$288.3 billion in budget authority and \$297 billion in outlays.[Ref. 2]

During debate on this budget agreement, which coincided with the beginning of Operation Desert Shield, it was obvious that the defense spending caps would be violated if operations in the Middle East continued. Considering this, specific language addressing the additional cost of the conflict was included in Title 13 (Budget Enforcement Act (BEA) of 1990) of the Omnibus Budget Reconciliation Act (OBRA) of 1990 supporting the five-year budget plan.

---

<sup>1</sup> Cheney, Richard, Secretary of Defense, and Powell, Colin, Chairman of the Joint Chiefs of Staff, testimony before the Senate Armed Services Committee on the FY 92/93 Defense Budget, February 21, 1991.

### C. BUDGET ENFORCEMENT ACT OF 1990

The language included in the BEA required that the incremental costs of the Middle East operations be funded through off budget emergency supplemental appropriations. Thus, additional costs would not affect current defense spending limits, thereby alleviating any automatic cuts in the defense budget as a result of Desert Shield. The Act stipulated that for any entitlement programs requiring additional funding, there must be either compensating reductions in current entitlement programs, or increases in federal revenues would have to be earmarked to fund the new program. This has been referred to as the Act's pay-as-you-go (PAYGO) provision.

There were many significant changes in the budget process, some obvious and some not so obvious, as a result of the BEA. Although these changes did not affect the operations in the Middle East, they are worthy of mentioning to further define the current budget climate. Aspects of the Act effecting future budget decisions are summarized below: [Ref. 3:p. 25-40]

- although maximum deficit targets are still specified out to 1995, OMB is empowered to revise them, up to three times a year, as economic or technical considerations warrant, thus presenting a moving deficit target.
- the Act changed the emphasis in the congressional budget process from controlling the growth of the deficit to limiting spending
- the Act lessened the possibility of a general sequestration for at least the next two fiscal years.

- the Act allowed some expenditures to be exempt from spending caps, once designated as emergent in nature by Congress and the Administration.

Since its passage, there has been considerable discussion whether BEA has controlled spending. While 1991 deficits will exceed the all-time record of \$221 billion in FY 1986, the deficit will be lower than expected. In February, 1991, the FY 1991 budget deficit was projected to reach \$318 billion. However, the deficit for FY 1991 is now expected to reach only \$280 billion.[Ref. 4:p. 2] The decrease is due the interest that has been generated from the foreign contributions for DS/DS and delays in the Savings and Loan bailout. Considering the comparative ease and little public scrutiny with which the FY 1992 congressional budget resolution was passed, with record deficits projected for 1992, it is clear the BEA has influenced the budget process but only in shifting focus off the deficit, not in reducing it. No longer are there cries for deficit reduction and drastic cuts. There are, however, spending caps in place and if these caps are surpassed by anything other than "emergent expenses," automatic cuts in budgets will occur.

The primary difficulty with the Act, from a budgetary viewpoint, concerns emergency expenses. They are exempt from triggering automatic cuts and allow increased spending, but they are not well defined. For example, in past budgets Congress appropriated funds to fight forest fires in national parks.[Ref. 4:p. 3] This year funds may only be appropriated



to cover half of the average number of fires expected. If the funding levels were based on true estimation of expected fires, this would be acceptable. However, it appears that the budget has been cut to shift part of the expenses to subsequent emergent funding. If the number of fires is greater than half the average, then additional funding can be requested to fight these "unforeseen" emergency fires. By claiming the higher incidence of fires was unexpected, these requests would satisfy the requirement of emergency supplemental appropriation. Who will argue that the additional fires are not emergency requirements and avoid any automatic cuts in current spending to finance these additional operations?

There obviously have been some significant changes to the budgeting process as a result of the Act. However, there are numerous questions with regard to its effectiveness and many speculate that it will neither limit spending nor reduce deficits. It is beyond the scope of this thesis to evaluate the BEA itself. The review here is limited to those areas impacting estimates of the incremental costs of DS/DS.

Several parts of the BEA affect cost estimation for the Persian Gulf conflict. As mentioned above, the Act did exempt the costs of DS/DS from the spending limits, but the language in the Act stipulated that only incremental costs would be captured:

Desert Shield costs mean those incremental costs directly associated with the increase in operations in the Middle East and do not include costs that would be experienced by the Department of Defense as part of its normal operations absent Operation Desert Shield.[Ref. 5:p. H12591]

This language was intended to ensure a clear understanding of costs to be captured while not triggering automatic cuts in defense spending. Although not stated in the Act, it was apparent that the language was designed to ensure that DoD did not use the operation to increase annual defense spending and regain funds cut in the five-year budget agreement. However, the use of incremental costs in the language did not alleviate all confusion in determining which costs met the definition of incremental costs of the war.

The legislative requirement allowing only the incremental costs of the conflict to remain exempt from the spending caps motivated discussions on which costs met this requirement. Associated with this discussion came the review of what were the incremental or marginal costs.

#### **D. OPPORTUNITY COST AND MARGINALISM<sup>2</sup>**

The opportunity cost concept recognizes that the federal budget is limited. Therefore, spending and regulatory decisions that use scarce resources incur costs in terms of

---

<sup>2</sup> This discussion is based on a paper written at the Naval Postgraduate School titled "Cost Estimates for Operation Desert Shield/Desert Storm," jointly developed by LCDR John Espie, LT Brian Hinkley, and LCDR Andy Johnson in the Spring of 1991.

foregone alternatives. If funds are used for one particular purpose, competing uses may go unfunded. Opportunity cost measures the cost of a decision in terms of the value of the forgone alternative. This is the appropriate definition of cost when resources are limited.

A strict definition of economic marginalism is the cost or benefit associated with the production or consumption of one additional unit. In relation to defense, where one additional unit is not well defined and difficult to measure, marginalism becomes equated with incremental cost. Therefore, marginalism entails looking strictly at the additional costs and benefits associated with a particular contingency.

Equity, the primary concern of every burden sharing debate, requires that the marginal costs and the marginal benefits of each burden sharing member be balanced in relation to every other member. Therefore, for burden sharing purposes in defense alliances, the total marginal (incremental) costs are the appropriate cost measure for determining equity, and the costs (current and future) should be valued in terms of opportunity costs because of the scarcity of defense resources.

For defense budgetary concerns, the only costs that are appropriately included are those costs which are the marginal costs of defense. That is, the costs of the contingency operation that otherwise would not have been incurred. These marginal costs should also be valued in terms of opportunity

costs. The emphasis of the thesis is to address costs that should be considered from a budgetary viewpoint. This thesis will examine whether the cost estimates provided for DS/DS satisfy these requirements.

### III. EARLY DEVELOPMENT OF COST ESTIMATES

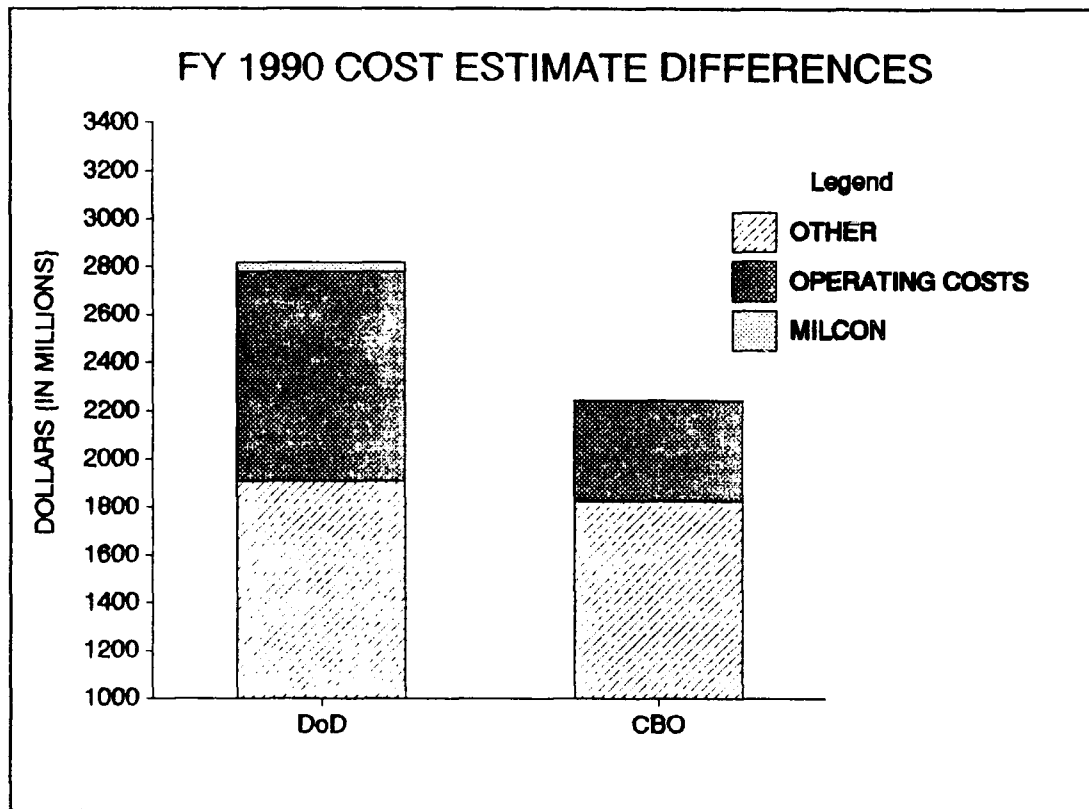
#### A. DoD, CBO, AND GAO INCREMENTAL COST ESTIMATES

Starting in mid-August, there were efforts to gather the projected costs of the operation and ensure ample time to generate the funding required. In September 1990, DoD provided the first estimates for the operation, which were presented prior to the signing of the BEA. The cost estimates were \$2.7 billion in budget authority and \$1.9 in outlays, covering the period from August 2, 1990 through September 31, 1990.[Ref. 6] Later that month, DoD revised these estimates to \$2.9 billion in budget authority and \$2.1 in outlays and estimated that the incremental costs for FY 1991 would be \$15 billion.[Ref. 7] These estimates were based on an expected deployment of 210,000 personnel in the region throughout FY 1991. Critically, the estimate for FY 1991 also assumed there would be no armed conflict.

In September, CBO provided its estimates for the costs of the operations in the Middle East, based on DoD information.[Ref. 8] Table I provides the FY 1990 cost estimates as developed by DoD and CBO while Figure 1 highlights the categories with the largest difference in estimates.

TABLE I. FY 1990 COST ESTIMATES FOR DESERT SHIELD

(IN MILLIONS)			
CATEGORY	DoD	CBO	DIFFERENCE LESS THAN DoD IN ( )
AIRLIFT	472	484	12
SEALIFT	275	336	61
OTHER DEPLOYMENT	271	250	(21)
MEDICAL	42	30	(12)
OPERATING COSTS	873	418	(455)
RESERVE CALL-UP	178	168	(10)
IN-THEATRE SUPPORT	250	250	0
OTHER	20	7	(13)
DESERT SHIELD SUBTOTAL	2381	1943	(438)
FUEL PRICE INCREASE	300	300	0
MILITARY CONSTRUCTION	35	0	(35)
TOTAL	2716	2243	(473)
Source: DoD, "Preliminary Desert Shield Costs" (September 25, 1990), and CBO, "Estimated Costs of Operation Desert Shield" (September 7, 1990).			



**Figure 1 - Major Differences in FY 1990 Cost Estimates**

CBO estimated \$2.2 billion in budget authority and \$1.7 billion in outlays would be required for FY 1990, about a \$500 million difference from DoD's FY 1990 estimates for outlays.

Estimates were also provided by CBO for expected FY 1991 costs and are provided in Table II. The major differences in the cost estimates between DoD and CBO are highlighted in Figure 2.

**TABLE II. FY 1991 COST ESTIMATES FOR DESERT SHIELD**

(IN MILLIONS)			
CATEGORY	DoD	CBO	DIFFERENCE LESS THAN DoD IN ( )
AIRLIFT	2240	148	(2092)
SEALIFT	1560	34	(1526)
OTHER DEPLOYMENT	430	0	(430)
MEDICAL	50	8	(42)
OPERATING COSTS	2520	2664	144
RESERVE CALL-UP	2800	2365	(435)
IN-THEATRE SUPPORT	1800	1360	(440)
OTHER	60	85	25
DESERT SHIELD SUBTOTAL	11460	6664	(4796)
FUEL PRICE INCREASE	1740	900	(840)
MILITARY CONSTRUCTION	1800	0	(1800)
TOTAL	15000	7564	(7436)
Source: DoD, "Preliminary Desert Shield Costs" (September 25, 1990), and CBO, "Estimated Costs of Operation Desert Shield" (September 7, 1990).			



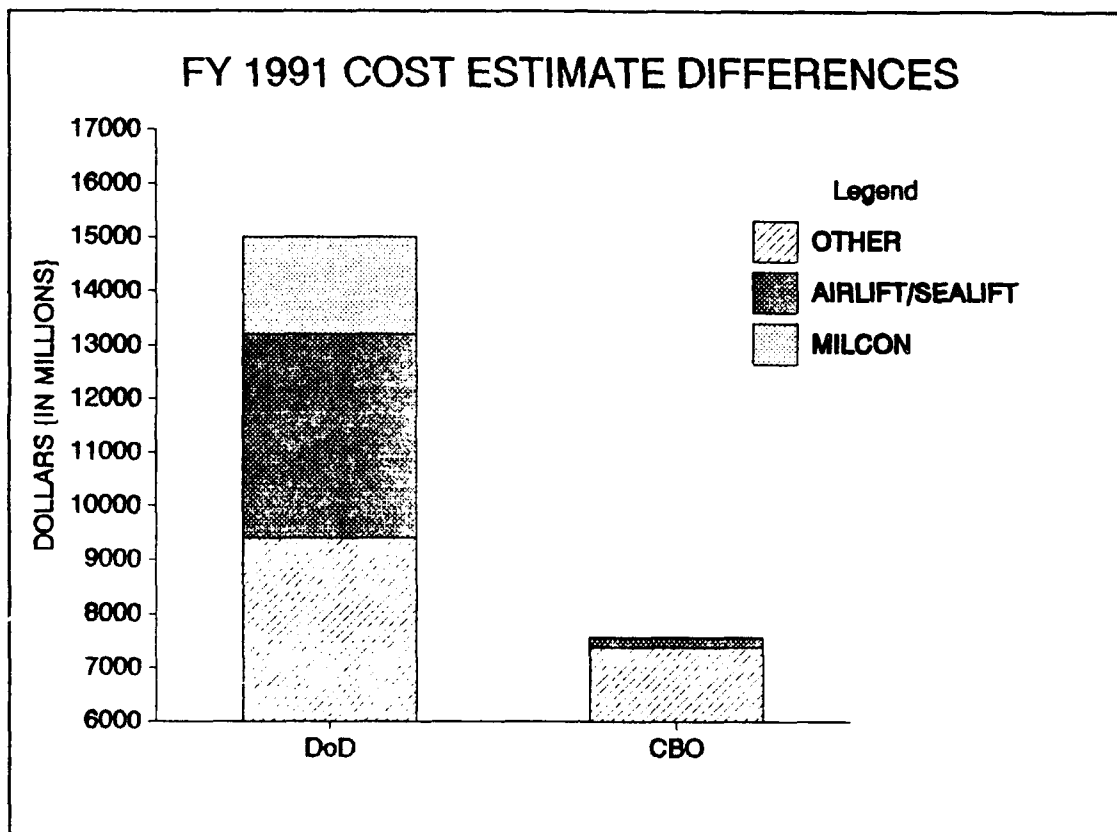


Figure 2 - Major Differences in FY 1991 Cost Estimates

CBO projected \$7.6 in budget authority and \$6.3 billion in outlays would be required, a difference of \$7 billion. CBO's assumptions on the FY 1991 estimates were somewhat different than DoD's. Although they estimated 210,000 military personnel would be deployed to the area, CBO assumed that transportation of personnel destined for the Middle East would decline in FY 1991 and projected higher efficiency in transportation of rotating personnel in FY 1991 than DoD. Specifically, DoD budgeted \$3.6 billion for transportation in FY 1991 while CBO only estimated \$200 million.

The other primary discrepancy between estimates was military construction. CBO did not estimate any cost for military construction while DoD estimated \$1.8 billion. The CBO memorandum stated that it was unable to provide an estimate on military construction because CBO had no basis on which to estimate these costs. It was unclear from DoD data exactly what type of facilities were desired, the expected length of usage, or what would be the cost of construction.

Another discrepancy, although not as critical as military construction or personnel transportation, was the difference in the fuel price estimates. While DoD had estimated a price increase of \$10 per barrel for 1991, CBO only used a \$5 increase. For each dollar difference in fuel costs, DoD estimated an annualized cost to DoD of \$200 million.<sup>3</sup>

Other assumptions used by both DoD and CBO included allotting for rotation of personnel every six months, increased operations tempo for the services with the exception of the Navy<sup>4</sup>, and no reimbursement from allies. Because both agencies made similar assumptions in developing their

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<sup>3</sup> This information was included in a fact sheet prepared by Mr Robert Shue, Office of the DoD Comptroller, on August 15, 1990 to provide initial cost estimates for Desert Shield.

<sup>4</sup> Although there was recognition of increased costs due to increased operating tempo, it was argued that the Navy is more frequently involved in forward deployed status and did not have the initial costs of unexpected forward deployment that the other services experienced.

estimates, these assumptions did not create differences in the cost estimates.

As a result of President Bush's November 8, 1990 decision to increase troop strength in the Middle East, CBO revised its incremental cost estimates for the operations.[Ref. 9] They estimated the total incremental costs of the operation for FY 1991 to be \$12.1 billion, adding \$1.3 billion for the costs of moving an additional 200,000 troops and \$3.2 billion for recurring costs of these additional troops for the remaining nine months of FY 1991.

Although no formal estimates were provided by DoD during this time, some published reports indicated that DoD's new estimate for FY 1991 was expected to be roughly \$31 billion.[Ref. 10:p. A1] These estimates for FY 1991 costs and underlying assumptions are provided in Table III. Cost estimates are presented in chronological order for the entire period between September 6, 1990 and February 27, 1991. Each new cost estimate is underlined as it was presented.

TABLE III. FY 1991 DS/DS COST ESTIMATE HISTORY

ESTIMATES OF PERSIAN GULF COSTS FOR FY 1991 (IN BILLIONS)				
DATE	DoD	CBO	GAO	ASSUMPTION
SEP 6, 90	<u>15</u>	-	-	DoD-210,000 PERSONNEL WITH NO HOSTILITIES
SEP 7, 90	15	<u>7.6</u>	-	CBO-210,000 PERSONNEL WITH MAJORITY OF LIFT COMPLETE BY END OF FY 90 AND NO HOSTILITIES
NOV 13, 90	15	<u>12.1</u>	-	CBO-UPDATED IN VIEW OF ADDITIONAL DEPLOYMENT OF 200,000 RESERVES WITH NO HOSTILITIES
DEC 10, 90	<u>31</u>	12.1	-	DoD-ADDITIONAL USE OF 200,000 RESERVES WITH NO HOSTILITIES <sup>5</sup>
JAN 4, 91	31	12.1	<u>34</u>	GAO-TOTAL OF 450,000 PERSONNEL WITH NO HOSTILITIES
JAN 15, 91	31	<u>15-25</u>	34	CBO-UPDATED ESTIMATE FOR DEPLOYMENT OF 400,000 PERSONNEL THROUGH FY 1991 WITH NO HOSTILITIES
	-	<u>14-18</u>	-	CBO-NEGOTIATED SETTLEMENT BY MARCH 1, 1991, WITH DEPLOYED PERSONNEL LEVELS DROPPING TO 100,000 BY END OF FY 1991
	-	<u>17-35</u>	-	CBO-HOSTILITIES BEGIN IN FIRST FEW MONTHS OF 1991, WITH RANGE OF COSTS BASED ON DURATION OF WAR, AND NOT ALL EQUIPMENT OR MUNITIONS WILL BE REPLACED

<sup>5</sup> This figure reported by the New York Times, there was no official estimate provided by DoD at this time. [Ref. 10]

(TABLE III continued)				
FEB 22, 91	<u>45-60</u>	17-35	-	DoD-BASED ON CURRENT DAILY COSTS OF COMBAT, COSTS TO DATE, AND THE REPLACEMENT OF MAJORITY OF EQUIPMENT AND MUNITIONS TO PREWAR LEVELS
FEB 27, 91	45-60	<u>44-54</u>	-	CBO-BASED ON DURATION OF WAR, USING DoD DATA, BUT NOT REPLACING ALL EQUIPMENT AND MUNITIONS EXPENDED
SOURCE: 1) Various DoD, CBO, and GAO reports on costs of the operation.				

In January, in anticipation of a supplemental Desert Shield appropriation request from DoD for FY 1991, testimony was requested by Congress to define what the incremental costs of the war would be for FY 1991.<sup>6</sup> The testimony occurred before the House Budget Committee, chaired by Representative Panetta, meeting on the costs and financing of operation Desert Shield.

During this January 4, 1991 meeting, GAO presented testimony on the incremental costs of Desert Shield. In this testimony, GAO estimated that the incremental costs of Desert Shield would be about \$34 billion.[Ref 11:p. 4] One primary assumption supporting its estimate was that troop levels would

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<sup>6</sup> Presenting testimony to the House Budget Committee were the GAO Comptroller General, Charles A. Bowsher, the Director of the Defense Budget Project, Dr Gordon Adams, and Mr. Lawrence J. Korb of The Brookings Institution.

remain at about 450,000 through FY 1991. This estimate appeared to be more in line with DoD's unconfirmed cost estimates.

Also in January, 1991, CBO provided a memorandum for the House Budget Committee updating cost estimates for the conflict. In this memorandum, CBO analyzed in detail projected costs of the war under different scenarios. These scenarios ranged from a negotiated settlement with Iraq by March 31, 1991 (as specifically requested by the Chairman of the House Budget Committee) to a war continuing through FY 1991.[Ref. 12:p. 5] The first cost estimate revised was the November 13, 1990, estimate. CBO had initially assumed 60,000 reservists would be called to active duty. It now appeared that 150,000 was a better number. In view of this, CBO raised its earlier estimate by \$3 billion to a total of \$15.1 billion.

While the January report updated the initial cost estimate, it also stipulated that CBO's estimate might still be lower than DoD's estimate due to differences in the costs of deploying troops and the costs of military construction. Specifically, DoD had anticipated a fourfold increase in transportation costs between FY 1990 and FY 1991, which reflected uncertainty concerning troop and equipment

rotation.<sup>7</sup> In addition, CBO still had the same concerns over type, duration, and construction cost of facilities. They stated they could not provide an accurate estimate in this area.

Although all estimates presented stated certain assumptions and qualified certain figures, CBO's analysis provided the first public in-depth analysis of the methodologies used to develop early estimates.<sup>8</sup> In their January memorandum, CBO attempted to develop possible cost estimates for various situations and provided several cost estimate ranges based on the following different assumptions:[Ref. 12:p. 5]

- 1) continue as is = \$15-25 billion (assuming current levels of troops remain in area through FY 1991)
- 2) negotiated settlement by March 1 = \$14-18 billion (assuming troop levels will fall from 400,000 to 100,000 by end of FY 1991)
- 3) event of war = \$17-35 billion (depending on duration and type war, and how much of the equipment lost in the conflict was to be replaced)

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<sup>7</sup> There was some discussion as to how personnel would be rotated out of the area. Would they be rotated with their own equipment or could the equipment be left behind for the relieving unit? The option of leaving the equipment behind seemed to make sense economically; however, the inefficiency in not having the troops continue to use the equipment with which they were familiar and had trained was the counter to this argument.

<sup>8</sup> The methodology used by CBO for its January estimates is included in Appendix B.

While these estimates and testimony presented Congress with rough cost estimates in different situations, most reports pointed out the difficulty of determining these costs. For example, the January CBO report stated:

No one can estimate the cost of war with confidence because costs would depend critically on how such a war was fought..[Ref. 11:p. 7]

The CBO report concluded with a statement addressing current overriding concerns with costs of the war in general:

These costs are important and must be considered in debates over U.S. spending choices and fiscal policies. Nevertheless, considerations other than costs-including threats to U.S. and world security and the potential loss of human life-must figure most prominently in decisions about war and peace in the Persian Gulf.[Ref. 11:p. 13]

In February, as part of the background material for the FY 1991 DS/DS Supplemental Appropriation Request, DoD provided updated FY 1991 cost estimates for DS/DS. The revised DoD estimates for FY 1991 were \$39.2 billion in incremental baseline costs with an estimated daily operating cost of \$150-\$1,650 million for the costs of combat which commenced on January 16, 1991.[Ref. 13:pp. 5-9] Coupling the baseline costs with the daily operating costs brought the total estimate for DoD to between \$45-60 billion dependent on the duration of the war and the amount of munitions and equipment to be replaced.

Later in February, based on DoD data, CBO testified before Congress and estimated the costs for the war would run between \$44-54 billion based on the duration of war and amount of



equipment and munitions required to be replaced. While the outcome of the war was unclear at the time of this testimony, it was projected the war would soon come to a successful conclusion. The main difference in the ranges of costs for the war between CBO and DoD at this time was the levels of munitions and equipment which would be replaced after the war. CBO estimated lower levels than DoD and did not project the requirement to return to prewar munitions levels.

As highlighted in Tables II and III, CBO cost estimates remained lower than estimates from most of the other organizations for similar scenarios. There is a subtle reason why. CBO is tasked with determining the supplemental costs Congress should appropriate to DoD to cover the incremental costs of the operation and does not necessarily report total incremental costs. DoD and GAO, while also attempting to provide these marginal costs, reported total incremental costs of the war and then determined the offsetting reductions available. Compounding the complex measurement problems, the incremental costs were being estimated to serve different objectives - each estimate valid for their particular purpose. CBO was strictly looking at the usage of resources above the amount DoD has currently been allocated in its annual budget.

## B. DIFFICULTY IN DETERMINING INCREMENTAL COSTS

This question of what costs constitute the true incremental costs of the war is a primary area of interest. The understanding and applicability of incremental cost and the controversy over what constituted the true incremental cost of the war fueled the majority of cost estimation debates early in the conflict.

As indicated in this chapter, many factors played in accurately estimating the costs for the conflict. Not only were there conceptual problems but there were definitional problems as well. These issues are addressed here.

At the inception of the conflict, DoD and CBO attempted to estimate how much the war would cost. It was apparent that although the incremental costs of the war were the only ones to be financed in the near term, the concepts associated with incremental cost estimates could be quite encompassing. For example, the estimates could include future increases in foreign aid, military support to allies, increased future deployments to the region to ensure stability after U.S. withdrawal, and the impact of higher fuel prices on the U.S. economy. The elements of these indirect and direct costs were unlimited and difficult to capture.

Considering the difficult concept of incremental costs, the congressional leadership focused only on the direct incremental costs or near term costs of the conflict. This would at least allow a thorough review of additional funding

requirements necessary for the conflict. But total expenditures remained critical to the burden sharing issue. Within the legislation passed earlier, the difficulty in conceptually understanding incremental costs was apparent. The language addressing incremental costs seemed very specific, but in reality presented difficulty in application.

Early in the operation, DoD was asked to provide cost estimates for those expenses that were above and beyond what costs were expected if the Persian Gulf Conflict had not occurred. In response to congressional inquiry, and in order to assist in the strategy of developing coalition funding assistance, DoD had to develop these estimates, even if very rough. This created difficulties with the mechanics of estimating costs, using current accounting systems, as will be discussed later. It was difficult to define the exact costs that were incremental in nature and solely incurred due to the conflict.

One of the first areas where this confusion became obvious was in the discussions associated with the additional fuel costs for the conflict. While no one argued the fact that these operations would require a higher operating tempo than normal, and therefore additional fuel costs, there were discussions on whether these additional incremental fuel costs should include the price increases due to the Persian Gulf crisis. More importantly, should DoD units not involved in the crisis be compensated for the increased fuel cost? The

increase in price was a fallout of the Middle East crisis and not planned for in the defense budget. Thus, DoD assumed that forces not involved in Middle East operations were suffering the fuel price increases due to the conflict. With this supporting analysis in hand, DoD included the fuel price increase for all DoD forces in its supplemental request.

While this inclusion was opposed by both GAO and CBO, eventual congressional action authorized this cost as incremental, although later stipulations were made limiting what funds could be used to finance these non-DS/DS DoD fuel costs. Authorizing these costs was unusual in that previous fuel price increases were required to be absorbed in current appropriated budgets. There was no allowance for other federal agencies, such as the Department of Transportation (DOT) or Department of Energy (DOE), to capture this fuel price increase.

Another area of difficulty was determining the incremental costs of supplies purchased during the conflict. While increased supply stockpiles were required to support the war effort, it was difficult to determine which purchases merely accelerated replacements that would have been required at some point in the future, and which were solely due to DS/DS. The stockpile replacement dilemma is illustrated in

the case of Maritime Prepositioning Ships (MPS)<sup>9</sup>. While all three MPS squadrons were utilized to support the conflict, how much should be charged to the cost of the war?[Ref. 14:p. 63] Specifically, each year one squadron is downloaded and equipment and supplies are replaced, repaired and updated as required. The squadron is then returned to prepositioning status. Considering this, should all three MPS squadron's replenishment be charged to the war? Alternatively, should this year's scheduled replenishment of one squadron be excluded from the incremental cost of the war because it would have been replaced anyway? Should the other two squadrons also be omitted because they too would have been replaced at a later date?

Other areas of defense spending were equally difficult to measure. For example, there were interesting discussions concerning the estimates for airlift. DoD had to establish the rate at which to estimate the cost of airlift and charge the using services accordingly. However, the increased operating tempo created some anomalies in the system resulting in costs being overestimated for airlift. GAO described this

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<sup>9</sup> MPS are squadrons of ships (thirteen total) in which military equipment and thirty days of supplies for three Marine Expeditionary Brigades (MEB) are stored as part of the mobility enhancement program. These ships are organized as squadrons and are normally based in Diego Garcia, Guam and the Atlantic. The purpose of such prepositioning is to quickly support deployed operations and to alleviate some of the requirement for forces to deploy with all their equipment, reducing lift requirement.

effect in a discussion of Military Airlift Command (MAC) charges:

MAC develops its tariffs based on its estimates of costs it will incur, including an amount to recapture fixed costs. The fixed costs are spread over its approved flying hours, 450,000 in the 1991 budget. To the extent MAC bills more than its approved flying hours, it will be recovering an amount in excess of its fixed costs. MAC indicated to the GAO that they may end the year having flown twice their approved flying hours. Actual billed hours will of course not be known until the end of the fiscal year.[Ref. 12:p. 13]

Another area included in discussions of incremental costs is munitions and equipment replacement. While DoD was estimating the cost of using and replacing such equipment early in the conflict, CBO, GAO, and other organizations were quick to point out the difficulty with these estimates. The real issue was whether to reimburse the cost of expended equipment if future plans were to eliminate this equipment. Specifically, do you replace munitions expended that were drawn from stockpiles scheduled for down sizing due to force reductions? How were you to capture the costs of equipment replacement if the production line was closed for that particular piece, or if the hardware was obsolete? Do you charge the replacement cost of a new updated version? Are different measures for these costs appropriate depending on whether you are trying to provide the total incremental cost of the war or the additional budgeting requirements?

These are difficult questions to answer. Testimony by GAO identified three costs of the conflict to be considered. The

first was the baseline cost of the war. This cost consisted of the amount of money required to train, equip, and maintain the armed forces at 500,000 personnel. These costs are considered sunk costs and should not be captured in additional funding requirements or recouped from allied contributions. These forces would be on active duty regardless of Desert Shield or any other operation. Although, in view of the cutbacks envisioned prior to the war, there could be some impact of the war on retaining a higher level of personnel than originally predicted.

The second cost is the true incremental DoD costs as a direct result of DS/DS. These are the costs that the Defense Department would not have incurred if the conflict had not occurred.

The last category of cost discussed in the GAO testimony is the direct non-defense related expenses, such as foreign aid and debt relief of certain frontline countries for their support of the coalition forces during the conflict.<sup>10</sup> While these non-defense related costs do reflect incremental costs of the war and should be considered from an overall budgetary viewpoint, they were not included in DoD cost estimates.

The report also notes that incremental costs of the war must take into consideration the offsets the war provided. For

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<sup>10</sup> Frontline countries are those countries impacted by economic sanctions against Iraq and countries which incurred significant costs in refugee relief (e.g., Turkey, Egypt, Israel, Syria).

example, several training exercises were canceled due to the deployment of forces to the Middle East. The budgeted amounts required for these exercises should be deducted from the costs of the war as incremental cost savings. Another offset, alluded to previously, is the treatment of supplies. If the supplies were eventually to be purchased anyway, then those supplies not used and available after the conflict should not be added to the costs of the conflict. The last offset would be to ensure that in-kind assistance such as fuel, water, food, medical supplies, and transportation not be included in funding requirements as the value of this assistance should be backed out of the incremental costs presented by DoD.

#### C. COMPARISON TO PREVIOUS CONFLICTS

These were very difficult issues and opinions differed on how these costs should be determined. When situations like these arise in the budget process, there is a tendency to compare the new situation to previous events. The Persian Gulf conflict was no exception.

As cost estimates were developed during the conflict, comparisons were drawn to costs experienced in previous conflicts such as the Vietnam War, Korean War, and others.

##### 1. Cost Comparison

In testimony before the House Budget Committee in January, prior to the beginning of hostilities, the cost of the Vietnam War, in 1990 dollars, was estimated to be \$427



billion. At the peak of fighting, in 1969, 538,700 personnel were deployed in Vietnam. The annual cost of the war was placed at \$85.6 billion (once again in 1990 dollars). This equates to an average of \$7 billion per month.[Ref. 15:p. 6]

In contrast, DoD's rough cost estimate of DS/DS prior to hostilities was about \$2 billion per month.<sup>11</sup> This comparison indicated that if hostilities broke out, these cost estimates could easily triple, assuming Vietnam is an indication of the possible costs of war in DS/DS. This position was further supported given the advanced weapons being used in the Gulf and the increased operating and maintenance costs for these systems. Also, the Gulf war was expected to use more tanks than Vietnam and costs could increase with the loss of these systems.

Testimony from the Comptroller General of GAO, was also provided to the same committee in February. In GAO's report, the costs of the Gulf conflict were compared to the Vietnam costs. Specifically, the costs associated with monthly operations and maintenance accounts were already equal to the costs of the peak months of combat during the Vietnam war.[Ref. 16:p. 5] These costs reflected operations prior to the beginning of the ground war. While both of these reports compared the costs of DS/DS and Vietnam, the differences in

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<sup>11</sup> This figure was estimated from the unconfirmed reports that new DoD estimates at this time were estimating the cost of the war for FY 1991 at about \$30 billion.

force structure, type of warfare, and intensity of operations were recognized. Even with uncertainty concerning the validity of this comparison, the bottom line that the costs of DS/DS may be underestimated drew congressional attention.

Another interesting comparison of costs of conflict, referred to in testimony before the House Budget Committee, was the costs for the 1973 Arab-Israeli war.[Ref. 15:p. 6] This estimate was presented to reflect a more similar conflict and the possible costs. During this war, the estimated Israeli daily expenses were \$250 million. This represented roughly \$750 million per day in 1991 dollars.[Ref. 17:pp. 235-236] This was equal to about the median of DoD estimates for projected daily operations (\$150 million to \$1,650 million).

## **2. Financing Comparisons**

As the enormity of the costs increased, further concern was created with regard to the mechanisms available to pay for the war, particularly before allied contributions increased in January 1991. Some of the first thoughts on funding the war centered on the option of a surtax, similar to Vietnam. During congressional testimony, a surtax was considered inappropriate under the current economic conditions. Specifically, the economic conditions prevalent in the Vietnam War era, nearly full employment, little excess capacity and high inflation, encouraged the use of the tax to cool off the economy. With the recession during DS/DS and the

limited investment required to replace military inventories, a surtax was not considered appropriate, as observed by the Chairman of the Federal Reserve Board during testimony before Congress.[Ref. 18:p. A1]

While concerns over spending remained, borrowing against the deficit to fund the war appeared a more likely option. However, as foreign contributions increased and the war was successfully completed in a short time period, it appeared the contributions would at least cover the majority of defense costs, if not all. As this transition occurred, concerns over costs turned to the collection of actual contributions.

In Chapter V, the actual cost reports provided by OMB to Congress will be analyzed and additional discussion will be presented on the incremental cost issues that continue to be debated following the conclusion of the war. Prior to discussing these reports, it is informative to examine the legislative budget process which supported the war as it progressed. The Persian Gulf Conflict presented unique circumstances for the budget process and provided unusual vehicles for funding decisions.

#### **IV. FUNDING PROCESS/SUPPORTING ACTIONS DURING DS/DS**

##### **A. CONGRESSIONAL DECISIONS ON FUNDING ISSUES**

In the earliest stages of the conflict, the executive and legislative branch sought methods by which to support the costs of the operations. Beginning in early August, DoD initiated efforts to estimate the costs and determine the required funding to maintain operations and not detrimentally impact worldwide military operations.

On August 15, 1990, SECDEF briefed the President on the expected costs of Operation Desert Shield and the potential impact on other current military operations. On August 24, SECDEF invoked Revised Statutes 3732 (41 U.S.C. 11), the Feed and Forage Act.[Ref. 19] The Act authorized DoD to obligate funds beyond those currently appropriated by Congress to continue operations through the remainder of FY 1990. As the operation progressed, SECDEF collected initial cost estimates from the services.

On September 6, 1990, SECDEF forwarded a request to OMB for an FY 1990 Supplemental Defense Appropriation. This appropriation request covered both the obligations incurred as a result of invoking the Feed and Forage Act and other expenses associated with Desert Shield. Although DoD estimated the incremental costs for Desert Shield of \$2.7

billion, some of these costs had been covered by transferring funds or by deferring and canceling lower priority requirements. The actual incremental cost for DoD that required additional funding was \$1.885 billion.[Ref. 6]

On September 14, 1990, President Bush forwarded this DoD supplemental request to Congress; included within the request was a proposal to cancel Egypt's military debt of about \$7 billion. This action was to express gratitude for the support Egypt demonstrated during the initial phases of the conflict.[Ref. 20]

The administration was equally busy during this time looking for ways to develop coalition forces in the Middle East and contacting allies to assist in funding the coalition efforts. During the month of September, the first of these "tin cup" trips was conducted in an effort to raise contributions to offset the costs of the operation for the U.S. There were two separate groups conducting the "tin cup" trips, one by Secretary of State Baker and the other by the Secretary of the Treasury Brady.[Ref. 21:p. 10] These trips were supported by the State Department, DoD, and the Treasury Department and involved personnel from each on the actual trips.[Ref. 22]

Later in September, DoD revised the estimates for costs in August and September to \$2.7 billion in total incremental costs and \$2.1 billion in incremental costs requiring additional funding.[Ref. 7]

On October 1, the first continuing resolution was signed into law, appropriating \$2,013,664,000 for Desert Shield expenses. The resolution also granted DoD the authority to transfer \$75,037,000 from DoD accounts to accounts depleted as a result of Desert Shield. Additionally, the Defense Cooperation Account (DCA) was established to allow foreign nations and individuals to contribute funds to support defense spending for Desert Shield. However, these funds were only to be utilized by DoD after they were authorized and appropriated by Congress. Also included in the resolution was authority to delay the impending default deadline on Egypt's military sales debt until December 31, 1990.[Ref. 23]

On October 26, 1990, the FY 1991 Defense Authorization Act was enacted authorizing the funds that had been appropriated (\$2.1 billion) in the continuing resolution.[Ref. 24] An additional \$1 billion was authorized for Desert Shield-related expenses for FY 1991 to be placed into the DCA. This additional authorization was an attempt by the chairman of the House Armed Services Committee (HASC) to provide funding for areas revealed to require "fixing" by Desert Shield.[Ref. 25] The additional \$1 billion funding was primarily divided between the authorization of imminent danger pay (\$110 per month) for personnel in Saudi Arabia and for certain defense programs (chemical and biological equipment, sealift, airlift, and minehunters). The Act showed the allies contributing to Desert Shield that the U.S. was willing to provide funds as

well and that there was a concerted effort to ensure that the funds placed into the DCA were only used for incremental costs of the conflict.

On November 5, 1990, the FY 1991 Defense Appropriation Act was signed, appropriating the \$1 billion authorized in October.[Ref. 26] The Act also included an amendment to Title 10, U.S.C., adjusting the initial active duty period and additional active duty period for Selected Reserves from 90 to 180 days. The Foreign Operations Appropriations Act was signed into law on the same day.[Ref. 27] It required the President to conduct a conference on the Egypt debt. If it was deemed in the best interest of national security, the President was authorized to cancel the debt.

Many people have commented that during January of 1991, we saw the finest display of the democratic process in quite some time. These thoughts were a result of the congressional discussions on determining if the President had the authority to use offensive action against Iraq without congressional approval. In November 1990, the U.N. had approved Resolution 678 giving the Member-states authority to use whatever means necessary to evict Iraqi forces from Kuwait after January 15, 1991.[Ref. 28:p. 7] The ultimate result of these debates, and various resolutions passed in Congress and the Senate, was to allow the use of military force if the President certified that diplomatic means and economic sanctions failed to resolve

the crisis. The Act mandating these actions was signed into law on January 14, 1991.[Ref. 29]

With the air campaign in January and the return of Congress following the winter recess, concern increased over the additional costs the conflict might create. On February 12, 1991, SECDEF once again invoked the Feed and Forage Act to obligate funds beyond those appropriated and authorized at the time.[Ref. 21:p. 6] On February 22, 1991, the first FY 1991 Defense Supplemental Appropriation request was transmitted to Congress by the President.[Ref. 22:p. 7] The request was for \$42.6 billion in supplemental emergency appropriations to cover financial requirements for FY 1991 DS/DS incremental costs.

Included within the request was a unique procedure for handling these funds. The President requested that SECDEF have authority to transfer funds from DCA to DoD accounts, with the approval of OMB, but without the usual congressional authorization and appropriation. The President also requested that the Working Capital Account be established. The Working Capital Account would be funded by the U.S. with \$15 billion. In the event that the DCA account balance was unable to meet DoD needs, SECDEF would be authorized to transfer funds from this account to DoD accounts as deemed necessary to meet defense needs for the conflict. Transfers could be made with OMB approval, but would not require congressional action. This account would provide a "bridge loan" until sufficient



funds were placed into the DCA by foreign contributions. Lastly, the request included a proposal that Congress formally appropriate DoD the money contributed to the DCA without any specific amount indicated - a blank check request.

In February, the ground war commenced and was successfully concluded within four days. Iraq surrendered unconditionally and agreed to all U.N. Resolutions. The following month Congress debated the FY 1991 DoD supplemental request. On April 6, 1991, the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991 was signed into law.[Ref. 30] The Act authorized \$42.6 billion to cover the incremental costs of the war, bringing the total authorization for DS/DS to \$45.7 billion to date.<sup>12</sup>

This Act required DoD to submit detailed monthly reports on the actual incremental costs incurred for the war. These reports were to include an estimate of the value of the in-kind assistance provided to DoD forces by coalition members (e.g., food, water, fuel, etc). This Act also required that DoD withhold payments to non-paying pledging nations for reimbursement of indirect-hire foreign nationals working at

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<sup>12</sup> The total of \$45.6 billion equals the \$2.1 billion appropriated for the FY 1990 costs of Desert Shield plus the \$1 billion appropriated in the FY 1991 Defense Appropriation Act plus the \$42.6 appropriated in the FY 1991 Supplemental Act for DS/DS.

U.S. installations abroad, though SECDEF could waive this provision.<sup>13</sup>

Following this Act, the Operation DS/DS Supplemental Appropriations Act of 1991 was signed into law and appropriated \$42,625,822,000 to DoD.[Ref. 31] The Act established an account called the Persian Gulf Regional Defense Fund, and \$15 billion was placed in the account. However, the Act did not allow SECDEF to have authority over the account for any amount required - denying the request for "blank check authority".

Instead, SECDEF could only transfer funds from this account when the balance in the DCA was insufficient to meet amounts authorized and appropriated by Congress. Also, SECDEF was required to notify Congress seven days prior to executing any transfer from the Persian Gulf Regional Defense Fund. If any funds were used from the account, they would be replaced as soon as funds in the DCA were available. Finally, the Act prohibited arms sales to nations not fulfilling the commitments made to the U.S. during the crisis. This action typified Congress's concern that countries would not follow through on their pledges after the war was over.

These were not the only decisions and discussions that occurred in the months immediately after the war. There were

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<sup>13</sup> It was unusual to see the authorizing committees involved in the review of supplemental appropriation requests, as historically only the appropriation committees reviewed these requests.

concurrent discussions on the Dire Emergency Supplemental Appropriations request. This request was initially to cover other expenses deemed to be emergency in nature. If funded, these expenditures would not trigger automatic cuts in spending because the BEA of 1990 allowed supplemental funding as long as Congress and the President agreed that the expenses were emergent. During the discussions on this bill, and in light of the amount of contributions in the DCA, Congress attempted to add funding to defense for munitions above those levels that were expended during the war.[Ref. 32:p. 658] However, these additional expenses were dropped during Senate review.

There were also attempts to fund other areas outside DS/DS that Congress felt could not wait for the next regular appropriations bill, due in October, 1991. In view of the BEA, including these costs in the supplemental emergency request was the only vehicle to avoid automatic cuts.[Ref. 32:p. 657] This bill incurred strong resistance from OMB for this very reason. OMB indicated that these added expenses violated the agreed upon BEA spending caps.[Ref. 33:p. 728] Any spending exceeding these budget ceilings would eventually trigger automatic cuts.

The eventual outcome of the bill was a \$5.4 billion appropriation, with \$655 million appropriated for an expanded package for the Gulf War veterans.[Ref. 33:p. 728] However, the only appropriations to come from the DCA was the \$655

million for veteran's benefits. Also included in the Dire Emergency Act was \$650 million for aid to Israel and \$200 million for aid to Turkey.

In July, the President transmitted the second FY 1991 supplemental request to Congress. This request sought \$2.9 billion to cover the additional FY 1991 incremental costs of the war. It also requested authority to transfer \$6.573 billion appropriated in the first supplemental from FY 1991 to FY 1992.[Ref. 34] This request is currently under congressional review.

With this last supplemental request, a total of \$49.2 billion had been requested to cover the incremental costs of the war, and \$46.3 billion had been appropriated.

#### **B. ACCOUNTING STRUCTURE ESTABLISHED FOR DS/DS**

As mentioned above, the first unique account established for the conflict was the Defense Cooperation Account (DCA). This account was developed from an already existing 1954 law which allowed individuals to contribute to national defense via the National Defense Conditional Gift Fund. These contributions would be directly provided to the defense department accounts that the Secretary of Treasury deemed appropriate to meet the intent stipulated by the donor. However, there is no congressional review or approval required prior to the transfer of funds to defense accounts.

The administration attempted to tighten up the language of the law by requesting that SECDEF be responsible for this account rather than the Secretary of Treasury. This would allow the SECDEF to decide how best to use the funds donated. Congress showed great skepticism for this approach. This was reflected in their decision on how to operate the DCA as discussed earlier.

During the early phases of the conflict, when the international community began providing significant funds to offset the U.S.'s costs of the conflict, there was a need to ensure integrity in accounting for how contributions were used. Although Congress created the Defense Cooperation Account, there was concern over unlimited access to these funds. [Ref. 25:p. 3] This concern may have resulted from the mismanagement of funds highlighted during the Iran-Contra affair or from concern that the administration might use the funds to break the 1990 Budget Agreement. Regardless of the supporting arguments, Congress elected to restrict the use of these funds to only those levels properly authorized and appropriated.

By the end of December 1990, foreign contributions had reached \$4.5 billion, and it appeared the remaining pledges would be honored. Table IV provides a listing of DCA balances by month and Figure 3 provides a schematic of how the funds were transferred using the account structure.

TABLE IV. DEFENSE COOPERATION ACCOUNT BALANCE

(IN MILLIONS)			
DATE	BALANCE OF DCA	TOTAL TRANSFERRED TO DoD ACCOUNTS	INTEREST GENERATED TO DATE
OCT 17, 90	750	NONE	NONE
OCT 31, 90	1,626	NONE	NONE
NOV 30, 90	3,908	NONE	.7
DEC 31, 90	4,260	1,000	15.9
JAN 31, 91	5,323	1,000	17.7
FEB 20, 91	12,175	1,000	48.8
MAR 19, 91	16,914	1,000	80.2
APR 12, 91	28,990	1,000	93.8
MAY 13, 91	32,035	28,100	270.4
JUN 12, 91	37,810	28,700	307.3
JUL 15, 91	39,050	33,192	332.3
AUG 15, 91	41,239	34,141	359.7
SEP 15, 91	42,454	34,641	398.3
Source: DoD reports produced by the Office of the Comptroller, Office of the Secretary of Defense.			

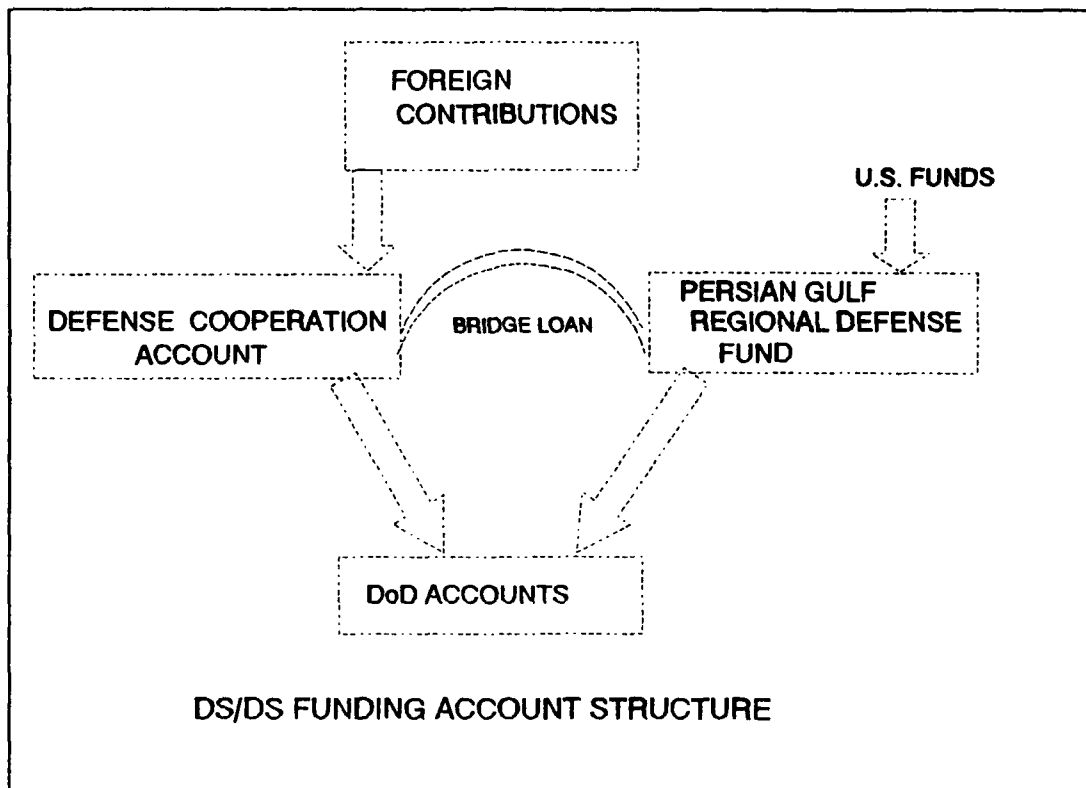


Figure 3 - Schematic of Account Structure

As the conflict progressed, the tempo of military operations increased. Operations accounts were depleted more rapidly than expected. In late 1990, Congress was increasingly concerned with rising projections in incremental costs and questioned if foreign contributions were sufficient. Congress also discussed what mechanisms would be required to fund these additional costs. Concern over sharing the burden of the war and how to best appropriate and account for the costs of the conflict became central in the debate over granting the President authority to use force against Iraq.

In view of this, and prior to submitting a formal supplemental request, the administration continued to negotiate with allies and coalition members to increase their financial contributions and commitments. There were reports that after the start of hostilities the administration began negotiations with various countries and utilized a formula to develop the financial burden each country should assume. [Ref. 35:p. A17] The formula called for Japan to provide twenty percent of the cost, the U.S. and other allies to provide twenty percent, and Kuwait and Saudi Arabia to provide sixty percent. Although reported in press, interviews with key personnel involved in establishing the correct levels of financial responsibilities indicated that they had not used any particular formula. [Ref 22]

This second round of negotiations seemed very successful and resulted in a substantial increase in commitments. Contributions increased from about \$10 billion to almost \$45 billion. This eased congressional tension concerning how and who would pay for the war. Tables V and VI provide a summary of the balance of cash and in-kind assistance in commitments and actual contributions received from foreign countries and highlights the dramatic increase in contribution commitments in early 1991.



TABLE V. FOREIGN CASH CONTRIBUTIONS TO THE U.S.

(IN BILLIONS)		
DATE	PLEDGE TO DATE	RECEIVED TO DATE
DEC 31, 90	7.132	4.560
APR 19, 91	49.132*	30.210
APR 25, 91	49.640	31.335
MAY 14, 91	49.273	32.035
JUN 13, 91	49.179	37.810
JUL 12, 91	48.214	39.050
AUG 13, 91	48.259	41.238
SEP 12, 91	48.202	42.454
<p>* - Total pledges received for 1991 were \$44.817 billion, with estimated cash of \$42 billion and in-kind assistance covering the remaining \$2.8 billion.</p>		
<p>Source: DoD monthly cost reports and CRS documents. Although it appears there were drops in cash contributions in some months, this was the result of not being able to identify the exact amount of in-kind assistance which was included in the pledges.</p>		

TABLE VI. FOREIGN IN-KIND ASSISTANCE TO THE U.S.

(in billions)		
DATE	PLEDGE TO DATE	RECEIVED TO DATE
DEC 31, 90	2.608	1.257
MAR 31, 91	4.917	4.763
APR 30, 91	5.289	5.117
MAY 31, 91	5.470	5.298
JUN 30, 91	5.738	5.430
JUL 31, 91	5.693	5.454
AUG 31, 91	5.755	5.519
Source: DoD monthly cost reports and CRS documents. Although the reports listed receipt of in-kind assistance to date, there were recognized delays in the reporting of in-kind assistance.		

Another unique account was the Persian Gulf Regional Defense Fund. This was created in the first FY 1991 Defense Supplemental Appropriation. As previously discussed, it was not the account that OMB had requested, but it did serve as a "bridge loan" if funds in the DCA were inadequate. If funds were drawn from this account, they would be replaced as funds were deposited in the DCA. The only exception to this was the appropriation of \$320.5 million to Operation Provide Comfort in July 1991. These funds were used in the Kurdish relief

effort. Any funds not used in this account revert back to the treasury.

An interesting sidelight regarding this account is provided by the treatment of the incremental fuel cost requests. Congress allowed DoD to recoup the incremental fuel costs associated with the oil price increases during DS/DS (recall the discussion on incremental fuel costs provided in Chapter III). However, Congress would not allow the DoD forces not involved with the Persian Gulf Conflict to fund their incremental fuel expenses from the Persian Gulf Regional Defense Fund. Instead, price increases for non DS/DS DoD participants could only be drawn from the DCA. DoD units involved in the Persian Gulf Conflict were able to fund their above budget fuel usage and the incremental fuel price increase from either account if required. In actuality, this restriction was never constraining. With increased foreign contributions, the DCA provided ample funds.

The unique accounting structure established to handle foreign contributions and subsequently disburse funds to DoD accounts was considered successful and accomplished its purpose. Similar off budget accounting and funding procedures may be required again, not only for the funding of similar future conflicts, but to monitor spending and use of funds set aside for a particular account.

### C. GULF CRISIS FINANCIAL COORDINATION GROUP

The account structure developed for handling foreign contributions was not the only new procedure established during the conflict. There were also mechanisms established to encourage economic assistance to countries economically impacted by the economic sanctions against Iraq.

One such measure was the Gulf Crisis Financial Coordination Group (GCFCG). President Bush established this activity to encourage allied countries to contribute to frontline countries requiring economic assistance. The U.S. Treasury Department was charged with tracking the allied commitments and verifying the disbursements. The Treasury department held a conference among the various donor countries, the IMF, and World Bank members to encourage participation and support for this type assistance.

In January of 1991, there had been a total of \$13.1 billion in pledges and \$6 billion had been disbursed to the frontline countries. In August of 1991, the total amount pledged increased to \$16.1 billion and \$8.9 billion had been disbursed. Most recently, the balance of pledges is \$16.2 billion with \$10.6 billion in disbursements. Expectations are that the remaining pledges will be disbursed by the end of the 1991, based on a schedule of payments agreed on by the donor countries. This information is presented in the table below, which highlights the commitments and disbursement of funds to frontline countries.

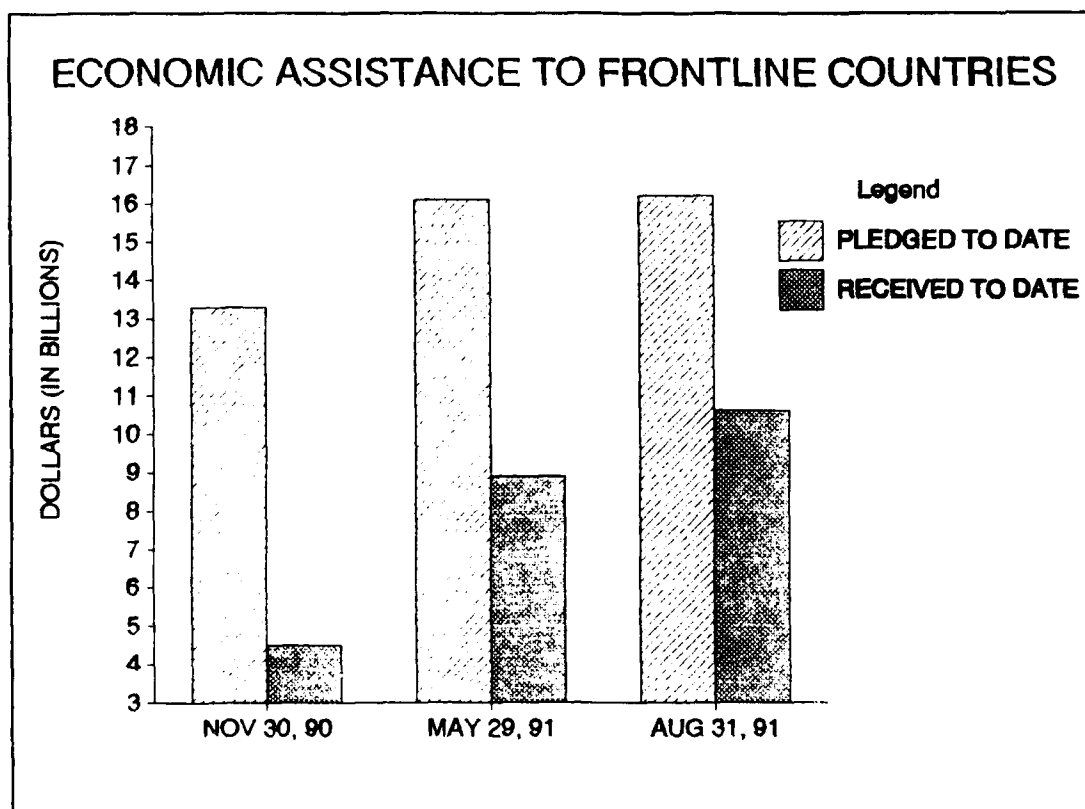


Figure 4 - Economic Assistance to Frontline Countries

One interesting item to note is the detail to which public information is available on the exact amount of assistance to each country. The sensitivity of openly reporting the specific amount provided to each country has required that only the aggregate numbers be disclosed. If numbers were reported country by country, it would create a constant debate over differences in amounts each country received, or did not receive, as compared to other countries. While this did not impact U.S. budget issues, it was a unique process executed by the administration providing another vehicle to solicit world support and monitor its success.

#### D. INVOKING THE FEED AND FORAGE ACT

There were other unique and unusual actions taken to ensure funding was available for the Persian Gulf Conflict. One of the mechanisms enacted to fund emergent DoD requirements was the Feed and Forage Act.

The Act is 1861 Civil War legislation, popularly referred to as the Food and Forage Act. The Act allows the military to expend funds beyond those allocated for daily operations requirements. The Act was primarily designed to ensure that military forces received adequate food and water for personnel and feed for their horses, reflecting the daily operating concerns of then current military forces.

During DS/DS the Act was invoked on two separate occasions. The first was on August 24, 1990, just after operations in the Middle East began. Operations and maintenance accounts (O&M) were being depleted rapidly for all DoD agencies and military departments. This was not unexpected because the operation began in the last part of the fiscal year and most funds were obligated through FY 90.

The second time the Act was invoked was in February of 1991, due once again to the rapid pace at which the O&M accounts were being expended. At the current rate, yearly funding levels would be consumed by March or April. Invoking the Act allowed DoD to over-obligate during DS/DS, and subsequently submit defense supplemental appropriation requests to cover the over-obligations. At this time, the

Act was primarily invoked for the Army and Marine Corps O&M accounts.

Prior to DS/DS this Act was last invoked in 1982, due to a very precipitous rise in fuel prices occurring late in the fiscal year.[Ref. 36:p. 27] The Act had also been invoked several times during the Vietnam War. During testimony before the House Budget Committee on the FY 1992 Defense Budget, the DoD Comptroller described the limitations of the Act as it applied to modern military forces and the specific categories of DoD accounts authorized to over obligate under this Act.[Ref. 36:p. 11] Appendix C contains the DoD Comptroller's written description of how the Act was used, as provided to the House Budget Committee.

It is clear from congressional questions during this meeting that there was concern over using such a dated law. Specifically mentioned was the fact the Act was not written for modern purposes and it appeared to lack the appropriate congressional oversight.[Ref. 36:p. 27] The counter the DoD Controller and the Deputy Secretary of Defense made to this concern was the fact that the Act is rarely used. If invoked, supplemental appropriation requests are forwarded shortly after invoking the Act. Also, although invoked twice during DS/DS, the Act is not generally linked to participation in a conflict. Although the law appears antiquated, it was effectively used to continue operations, avoiding the

possibility that congressional delay might stop operations.

As a Congressional Research Service report stated:

The invocation of the act allowed the continuation of operations without the thoughts of operations coming to a grinding halt due to congressional inaction. [Ref. 21:p. 6]

Another unique event after DS/DS was the creation of monthly cost reports and the requirements on what was to be included in the reports. This is the subject of the next chapter.



## **V. ANALYSIS OF POSTWAR COST ESTIMATES**

This chapter will examine the cost reports produced after the war, analyzing the effectiveness of these reports in measuring the marginal costs of the war. Until this point, the thesis has presented the budget climate at the start of the crisis and discussed the early cost estimates developed by DoD/OMB, CBO, and GAO, particularly the difficulty encountered in providing these incremental cost estimates. The funding mechanisms employed during the conflict and the timelines associated with decisions supporting these mechanisms have also been discussed. This chapter will first discuss the background behind the creation of the monthly cost reports and the shift in oversight focus on cost reports. Then, it will analyze the actual cost data reported, the accrual cost forecast, and the valuation of in-kind assistance included in the report.

### **A. DEVELOPMENT OF COST REPORTS**

As the war concluded, DoD continued to develop and refine cost estimates of the total DS/DS incremental costs. Congressional action in the FY 1991 DS/DS Supplemental Appropriation Act required DoD to provide accurate monthly

cost reports on actual costs accounted for to date and updated estimates for possible future incremental costs.[Ref. 31]

These reports were initiated in April of 1991 and the first OMB cost report was forwarded on April 20, 1991.[Ref. 37] The reports presented the total incremental cost of the conflict to date to account for the expenditure of those supplemental funds authorized and appropriated for the conflict. Per congressional direction, these reports also included the most current figures on foreign contributions, both cash and in-kind assistance.

The format chosen for these cost reports was unique. Although funding was provided via normal appropriation accounts, the actual cost reports were not formatted by these categories. They were formatted on aggregate levels under general categories determined by Congress. The specific categories were developed jointly by the House Budget and the House Armed Services Committee.[Ref. 38] These cost categories and definitions are listed below:[Ref. 30]

1. Airlift: costs related to the transportation by air of personnel, equipment, and supplies.

2. Sealift: costs related to the transportation by sea of personnel, equipment, and supplies.

3. Personnel: pay and allowances of members of the reserve components of the armed forces called or ordered to active duty and the increased pay and allowances of members of the regular components of the armed forces incurred because of deployment in connection with operations in the Persian Gulf.

4. Personnel Support: subsistence, uniforms, and medical costs.

5. Operating Support: equipment support costs, costs associated with increased operational tempo, spare parts, stock fund purchases, communications, and equipment maintenance.

6. Fuel: the additional fuel required for higher operating tempo and for airlift and sealift transportation of personnel and equipment as well as the higher price for fuel during the period.

7. Procurement: ammunition, weapon systems improvements and upgrades, and equipment purchases.

8. Military Construction: the costs of constructing temporary billets for troops, and administrative, supply and maintenance facilities.

These reports were designed to provide the incremental costs associated with DS/DS and the status of foreign contributions to offset the costs of the war. The report format provided the total incremental costs for three different time periods and to date: 1) August to September 1990, 2) October to December 1990, 3) the costs collected during the month before last (i.e., costs collected through July were reported in September) and 4) the total costs to date. The cost reports are provided in aggregate numbers for each of the eight categories described above and in detail for each category. Within each category, the costs are divided into the amount of costs associated with each of the military departments and defense agencies. Appendix D provides a copy of the September 15, 1991 cost report provided by OMB.

The second portion of information provided is foreign contributions. These reports include the commitments or

pledges made and the total amount received to date. The information was further divided into the cash contribution and in-kind assistance provided by each country, listing the amount pledged and the actual receipt of these commitments by country for both 1990 and 1991. Following this information, there is a general description of the major type of in-kind assistance received from each country providing significant in-kind assistance.

Although these reports were released by OMB and required by congressional action, they do not match the supplemental financing requirements of DS/DS. The cost reports provide the total DoD incremental cost of the war. The total incremental war cost, as reported by OMB, contains several costs not included in the supplemental funding requirements as indicated on the cover sheet of each OMB report. Some of these include: the costs incurred between August and September 1990, costs covered by in-kind assistance from allies and frontline states, and costs offset by the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf Conflict. Also included in the cost reports, but not in the supplemental funding request, were the costs associated with expended munitions or destroyed equipment that may not be replaced because of the planned drawdown of military force levels. Table VII provides the total incremental cost estimates contained in the reports.

TABLE VII. POSTWAR OMB/DoD MONTHLY COST ESTIMATES

(IN BILLIONS)				
OMB MONTHLY COST REPORTS	PRELIMINARY COST ESTIMATE TO DATE (1)	FORECAST TOTAL DoD COST OF WAR	OFFSETTING COST REDUCTION FOR REALIGNMENT	OFFSETTING COST REDUCTION FOR IN- KIND ASSISTANCE
#1/APR 20, 91 (AUG90-DEC90)	13.189	60	1.305	1.257
#2/APR 27, 91 (AUG90-FEB91)	31.574	60	3.119	3.875
#3/MAY 15, 91 (AUG90-MAR91)	36.115	60	3.265	4.763
#4/JUN 15, 91 (AUG90-APR91)	39.995	60	1.029	5.116
#5/JUL 15, 91 (AUG90-MAY91)	42.194	61	.972	5.298
#6/AUG 15, 91 (AUG90-JUN91)	44.197	61	1.029	5.419
#7/SEP 15, 91 (AUG90-JUL91)	45.336	61.1 (2)	1.029	5.454 (3)
NOTE (1): These costs were those costs incurred during the timeframe indicated and projected costs for equipment repair. Also, phasedown and redeployment costs incurred to date were included. However, costs such as continued operations in the area, equipment repair not yet identified, and long-term benefit and disability costs were forecast and are reflected in the total forecast cost column.				
NOTE (2): Although \$61 billion was the estimated total cost of the war, the offsetting reductions from estimated in-kind assistance (\$5.8 billion), internal realignment (\$1 billion), material not requiring replacement (\$1.2 billion), and the costs associated with long-term benefits/disabilities to be considered later (\$3.9 billion), reduced the total funding cost requirement to \$49.2 billion.				
NOTE (3): Current estimates project in-kind assistance to reach \$5.8 billion.				

The total costs estimated for DS/DS in these reports were preliminary and represented full incremental costs of the conflict. The reports include estimates of costs for such items as: 1) equipment repair, rehabilitation, and restoration due to high operating rates and combat use, 2) the phasedown of operations and 3) the return deployment of military forces.

The reports recognize the uncertainties of estimating these future costs. Furthermore, costs that cannot be accurately estimated at the time of the report are excluded (i.e., unidentified equipment repair, rehabilitation and restoration requirements, long-term benefits and disability costs, and the costs of continuing operations in the region).

With these concerns in mind, DOD estimated total incremental costs at \$60 billion in the second OMB report [Ref. 39] and then raised this estimate to \$61 billion in the fifth report. [Ref. 40] Of this total, only \$49.2 billion represents funding requirements for the war. As discussed in the second FY 1991 defense supplemental appropriation request, the following costs were not included in the request: [Ref. 34]

- \$5.8 billion of total incremental cost which would be covered by foreign contributions in the form of in-kind assistance.
- \$1.0 billion which would be absorbed by DOD internally through reprogramming or transfer of funds.
- \$1.2 billion to be excluded for material that was expended and will not be replaced.
- \$3.9 billion for the costs associated with Veterans benefits and related expenses to be considered later.

With the exception of the second FY 1991 defense supplemental appropriation request for \$2.9 billion, submitted in July 1991, all the identified incremental funding requirements have been met. Prior to the first OMB monthly report in April, 1991, \$42.6 billion had been appropriated in the FY 1991 Defense Supplemental Bill, \$2.1 billion had been appropriated in the FY 1990 defense supplemental, \$1 billion had been appropriated in the FY 1991 defense authorization bill, and \$.6 billion was appropriated in the FY 1991 Dire Emergency Supplemental. This brings the total appropriation to \$46.3 billion. If the final \$2.9 billion request is funded by Congress, the total defense supplemental funding for the war will match the reported incremental costs provided in the cost reports.

As discussed earlier, these same reports provide the current status of foreign contributions, both cash and in-kind assistance. As of the end of July, 1991 \$40.7 billion in foreign cash contributions had been received, with an additional \$7.7 billion anticipated. This would bring the total foreign cash contributions to \$48.4 billion.

With the exception of the \$2.1 billion appropriation in U.S. funds for the incremental costs of the war in the FY 1990 Defense Supplemental Appropriations Bill, it appears foreign

cash contributions will meet all additional U.S. FY 1991 funding requirements for DS/DS.<sup>14</sup>

However, this did not alleviate additional discussions on the issues associated with the estimation of DoD's incremental costs for future expenses associated with DS/DS.

#### **B. SHIFT IN FOCUS ON INCREMENTAL COST OVERSIGHT**

The conclusion of DS/DS brought new insights into the political realities available in the "new world order." The operation was described as illustrating the successful execution of sound military strategy and the apparent optimal use of advanced technology. As this euphoria of success swept the country, the visibility of DoD cost estimates subsided. Although cost estimation reports were routinely being updated, beginning with the April 1991 OMB monthly cost report, public support for the Gulf conflict eased political budget considerations. Some congressional members who had previously criticized the decision to resolve the crisis by war were quick to capture the public sentiment and voiced little objection to specified DoD funding requirements immediately following the war. [Ref. 41:p. 692] This attitude during the aftermath of the war was illustrated by the relative ease with

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<sup>14</sup> The total incremental costs are currently estimated at \$49.2 billion. The FY 1990 Defense Supplemental Appropriation bill appropriated \$2.1 billion for U.S. defense spending on Desert Shield in 1990. The remaining \$47.1 billion in funding requirements is less than the total foreign contributions of \$48.4 billion.



which the House and Senate passed the first FY 1991 Defense Supplemental Appropriations Bill.

Although congressional committees and CBO reviewed DoD's monthly estimates, there appeared little resistance to DoD's numbers. During interviews with key personnel involved in reviewing cost estimates for the defense oversight committees, it was apparent there had been a shift in the focus. This shift was not solely based on the military success and public support, but was also fueled by the additional foreign contributions received in early 1991. It seemed likely that the incremental costs of the war would be funded entirely from these contributions, but there was concern that the allies might not meet their commitments. As stated by one member of the HASC while discussing the concerns over foreign countries fulfilling pledges after the successful completion of the war:

It's sort of like you're in the middle of the Jerry Lewis Telethon then suddenly cure the disease. How many people are going to follow up on their pledge?[Ref. 42:p. 646]

However, these concerns dissipated as funds were received and further negotiations confirmed the intent to meet pledges.[Ref. 22]

Congressional review, although not as intense as prior to the war, was far from non-existent. The focus shifted from budget funding requirements to reporting actual costs. The focus shifted to 1) ensure correct costs were still captured and 2) ensure that the reporting requirements developed were followed and that the total incremental costs appeared

reasonable. Associated with this shift in focus came a corresponding shift in the primary oversight agencies involved in reviewing the defense estimates.

After the war and passage of the first FY 91 defense supplemental, oversight shifted from the congressional oversight committees and CBO to GAO. This was not unexpected. This transference of oversight responsibilities is normal. The FY 92/93 Defense Budget became the next congressional hurdle for the majority of the defense oversight committees.

However, Congress had not become completely disinterested in cost estimates or proposed funding initiatives. As discussed earlier, SECDEF's request to have authority to transfer funds into DoD accounts from the DCA without appropriation by Congress was denied. Congress continued to require normal procedures to ensure the funds were used only after they had been authorized and appropriated. Some flexibility may have emerged with regard to measuring exact incremental costs, but the process and allocation of funds remained standard to a large extent.

#### **C. COLLECTION OF ACTUAL COST DATA**

Difficulty in defining which costs met the incremental definition was one problem still facing the military departments. Equally difficult was predicting the accrual costs of the war within the required accounting structure.

Comments prior to the war, in early January, 1991, indicated that DoD had difficulty in obtaining good actual cost data because there was no effective cost accounting system.[Ref. 12:p. 10] This was recognized within DoD prior to DS/DS. Initiatives such as unit costing and OSD centralization of accounting systems from each of the military departments reflect DoD's concern with the inadequacy of the current system. Discussing these new initiatives in detail falls outside the scope of this thesis. However, interviews with congressional staff members and the Chairman of the House Budget Committee indicate that the unit costing initiative was a required evolution in reporting costs and that it might better support the development of incremental cost estimation for future operations.[Ref. 38]

Not only were there concerns for the adequacy of DoD's current accounting system from outside DoD but from within as well. During interviews with personnel involved in developing the actual cost estimates, there were some reservations regarding whether DS/DS costs could be adequately captured via the accounting system. Also, as reported in the guidance letter from OSD to the military departments on developing the cost estimates, the difficulty of determining the cost estimates via the current account structure was acknowledged.[Ref. 43] It was suggested that many estimates would need to be developed manually.

This same letter required that the cost estimates be provided by appropriations account and in a unique format developed within the Office of the DoD Comptroller. The difficulty in providing these estimates became quickly apparent during a January 4, 1991 meeting of the House Budget Committee on the costs of Desert Storm. In his opening remarks, the chairman of the committee mentioned his disappointment that there was no DoD representation at the meeting and that written estimates of war costs, promised earlier, were never delivered.[Ref. 36:p. 4]

In retrospect, the failure to provide timely cost estimation data may have added incentives to design the cost categories for the monthly DoD cost reports in the first FY 1991 Defense Supplemental Authorization Bill.[Ref. 38] Although these categories were defined in legislation, there are still some minor changes in original cost estimates due to incorrect cost category reporting.

One example was DoD's morale and welfare costs. In the third OMB report to Congress, morale and welfare costs of \$71 million were included in the personnel cost category. In the fourth OMB report these morale and welfare costs were shifted to the operating support category, reducing the costs for personnel. This change reflected the minor modifications required by the new cost reporting format to correspond more closely with normal appropriation structure.

Although some cost estimates were modified due to the revision of the cost accounting format, the majority of changes reflected improvements in information as time progressed.

Also discussed in interviews with the same personnel was the differences in the ability of each military department to use their department unique structure to estimate incremental costs. For example, the Navy was able to estimate increased operations costs above budgeted baseline costs more effectively than the other departments in the operations and maintenance accounts (O&M). The baseline costs assumed ships were at sea about 45 days a quarter. Thus, the Navy was able to determine the costs for the extra days at sea of ships involved in DS/DS.

The Air Force and Army cost accounting systems were somewhat different. They coded all activities associated with DS/DS and then included all costs coded as DS/DS in the incremental costs. This seemed adequate at the beginning of the war. However, incremental costs should be reduced by the offsets gained through cancellation of certain activities. For example, since training exercises were canceled at sites worldwide, the costs budgeted to these events should be reduced from the DS/DS cost estimates if the participants were not involved in the exercise due to the conflict. This created some accounting difficulty, since all coded activities had to be adjusted to back out all offsetting reductions.

Another example was provided in the fourth OMB report on the incremental costs of the war.[Ref. 44] There was a reduction of \$1.2 billion in the operating support cost category due to a revision in the Army's accrued maintenance costs. The original maintenance costs were overstated since the costs were partially offset by the cancellation of almost \$1.2 billion of in-country maintenance contracts and requisitions for repair parts and supplies.

There were also difficulties in ensuring DS/DS costs were coded correctly into the appropriate accounts. Simple coding misclassifications occur in normal accounting situations. With the increased logistics support required for DS/DS, the rate of incorrect cost coding likely increased. GAO is responsible for reviewing these accounting mechanisms and costs. Several press reports at the time of the GAO review indicated incorrect coding of events.[Ref. 45] However, for the most part, GAO personnel stated that these press reports were exaggerated and that the number of errors due to incorrect coding were relatively small. GAO testimony before congressional committees stipulated that they were confident the actual costs reported in the monthly OMB cost reports were reasonable and accurate.

In reviewing OMB reports, most oversight committees also agreed that the figures presented were accurate reflections of the actual costs and were reasonable.[Ref. 46:p. 1] However, there was still debate concerning the cost estimates of future

costs or the accrual costs primarily associated with the equipment refurbishment.

#### **D. ESTIMATES OF ACCRUAL COSTS**

The monthly OMB reports combine the difficult tasks of reporting actual costs, supported by factual data, and forecasting expenses which are extremely difficult to accurately estimate. The majority of the debate since April has focused on the difficult area of accrued costs. In testimony before congressional committees, the GAO has discussed the possibility that accrual costs have been overstated.

DoD estimated incremental future expenses in three areas, as mentioned before: phasedown of operations, redeployment of forces, and equipment refurbishment. In April, 1991, DoD estimated these costs would total \$28.4 billion, including about \$16.2 billion for the cost of equipment refurbishment. GAO questioned the equipment refurbishment estimate during testimony on the costs of DS/DS and allied contributions before the House Budget Committee. GAO maintained that some funds for equipment refurbishment were provided in the FY 1991 Defense Budget. Since these funds were planned for, and some equipment did not receive maintenance when required, these costs should offset DS/DS costs for equipment repair. Based on inspections of equipment used in DS/DS, GAO personnel

further indicated that the estimated costs to refurbish may not be as high as originally suspected.

While these costs can only be estimated, it is important to note that accrual costs associated with equipment wear and tear are "preliminary" in nature. Failure to capture such costs can have a significant impact on future budgets. These additional incremental costs would have to be absorbed in future budgets. However, it is difficult to determine which portion of future incremental costs are a result of DS/DS.

One technique might be to develop baselines on equipment repair normally experienced and then contrast this baseline with the current repair levels. This might indicate the incremental costs of equipment repair for DS/DS, but it would not account for the baseline repair level reduction created by the overall military drawdown.

#### **E. VALUATION OF IN-KIND ASSISTANCE**

As mentioned earlier, substantial foreign contributions were received from allied countries, both cash and in-kind assistance. As cost estimates were being developed early in the crisis, the exact amount of allied in-kind assistance was unknown. As later estimates were developed in early 1991, it was recognized that in-kind assistance could in fact substantially reduce the costs of the war. As of August 31, 1991, total in-kind assistance received was valued at \$5.519 billion with total commitments of \$5.755 billion.



The valuation of in-kind assistance, however, was not an easy task and represented unique challenges for DOD. As recently stated in an Army publication:

Determining the propriety for this type of support, capturing its monetary value, and then accounting for it all proved to be an extensive undertaking.[Ref. 47:p. 5]

Several concerns arose regarding in-kind assistance. The first concern was determining what type of support was needed and valued by the forces involved in the operation and how to coordinate delivery of this assistance to minimize negative impacts on critical logistics pipelines. Although in-kind assistance was primarily comprised of food, water, fuel, and transportation, there were other items, such as military equipment, that were offered as well. Early in the crisis, CENTCOM, via JCS, was asked to identify which types of assistance were and were not desired, and to specify the urgency involved in the delivery.[Ref. 48] This ensured that the desired assistance would be received in a timely manner.

The second issue concerned valuing the in-kind assistance. Many countries providing supplies did not have cost systems that enabled them to provide the exact cost of the material, especially in the case of the frontline countries. Other countries simply would not provide the value of the in-kind assistance. Many times the value was estimated by the prices the U. S. military paid for like material.<sup>15</sup> For budgetary

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<sup>15</sup> Some general guidelines DoD used in valuing in-kind assistance are included in Appendix E.

purposes, it is important to note that cost avoidance to the U.S. is the appropriate measure of value (e.g., what the U.S. would have paid if it were not provided). This alleviates the requirement for foreign countries to estimate the value of in-kind assistance. However, from a burden sharing perspective, the opportunity cost to the providing country is important, not the price or cost-avoidance value required for budgetary concerns.

The third issue concerned how best to report contributions of in-kind assistance. This issue was especially sensitive early in the war when it was important not to provide our adversaries potentially useful information on what materials were and were not being delivered. In addition, some donor countries did not want to be recognized publicly for their contributions, due to political sensitivities.[Ref. 48]

Finally, in the U. S., there was no standardized system or routine methods to account for in-kind assistance. Most reports were generated manually and there were time delays in reporting these contributions because of confusion over how to report the details required.

As concerns over costs became keener in early 1991, there were increased demands for more current value estimates. These values were demanded so that budgetary cost estimates provided for the conflict could accurately account for the offsetting contributions in in-kind assistance. GAO specifically commented that the time delays incurred by DoD

review of in-kind assistance reports from CENTCOM were hindering their cost estimate development. By law, these reports and estimates had to be provided to GAO to allow it to fulfill its legal obligation to audit contributions accepted by DoD. [Ref. 12:p. 9]

This chapter has examined the postwar cost reports being provided by OMB/DoD to congressional defense oversight committees. It is obvious that while earlier prewar estimates attempted to capture incremental costs, there were difficulties both in definition of costs and in cost collection. With the completion of the war, actual cost data became more precise but forecasting future incremental costs continued to be difficult. There were differences in opinion on how best to forecast these costs, leading to different incremental cost estimates.

The next chapter explores the future budgetary impact of DS/DS and the feasibility of utilizing the unique funding mechanisms discussed within this thesis for future events.

## **VI. FUTURE BUDGETARY IMPACT OF DS/DS**

The Persian Gulf conflict has affected the U.S. in several areas. These are the focus of this chapter. The first part of the chapter deals with the effect DS/DS has had on the U.S. economy, the federal deficit, and the U.S. defense budget. The second part of the chapter discusses the usefulness of the unique funding mechanisms adopted during DS/DS and their possible application in the future.

### **A. EFFECT ON U.S. ECONOMY AND BUDGET DEFICIT**

#### **1. U. S. Economy**

The Iraq-Kuwait crisis was a factor contributing to the recession in the later half of 1990. The slowdown in U.S. economic activity resulted at least in part from the higher oil prices created because of the invasion. While large petroleum and natural gas inventories and the relatively mild weather in the U.S. softened the effect of this price shock, the crisis resulted in a drop of almost one percent in the Gross National Product (GNP). [Ref. 16:p. 12]

However, with the outbreak of hostilities, the price of oil declined sharply. Additionally, military spending increased in FY 1991, with the added spending created by DS/DS, and the stock market improved following the successful

conclusion of the war. These factors may have reversed many of the negative effects on the U.S. economy initially created by the Middle East crisis. Thus, the earlier concerns over the effect of the war on the economy have greatly diminished.

## **2. Budget Deficit - 1991**

However, there are continued concerns regarding the potential impact the war will have on the federal deficit. The Budget Enforcement Act of 1990 was designed to limit spending to contain the growth of the deficit. However, it allowed for emergency spending without violating spending caps. During debates over which incremental costs to be designated as emergency spending, it became clear that emergencies could quickly become a routine loophole to avoid budget enforcement consequences. Part of the success of the Act lies in interpreting FY 1991 results.

As discussed earlier in the thesis, deficit figures for FY 1991 are in fact lower than expected. However, the primary reasons for the smaller expected deficits were the unexpectedly large foreign contributions for DS/DS and the delay in the bailout of the Savings and Loan crisis.

It appears that foreign cash contributions will cover all of DoD's incremental costs of the war for FY 1991. However, there are other federal expenses not covered by foreign contributions or offset by incremental savings. For example, debt forgiveness to Egypt, financial aid to frontline

countries in the war, and other postwar policies may add to federal spending.<sup>16</sup> These costs are above what would have been provided to these countries under normal conditions. Thus, they are a direct result of DS/DS. Although these expenses may be classified as emergency appropriations, this only alleviates the issue of exceeding spending caps and avoiding automatic cuts. These additional costs will add to the federal deficit.

Early in the war, the Director of the Taxpayer Assets Project, an independent organization, estimated the total quantifiable costs of the conflict under three different scenarios.<sup>17</sup> These estimates attempted to capture both DoD and non-DoD costs as well as the costs associated with higher oil prices and the drop in GNP. Table VIII is an example of one such estimate included in the report.

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<sup>16</sup> As discussed earlier in the thesis, Egypt received relief from \$7 billion in military debt, while Israel and Turkey received economic aid of \$850 million.

<sup>17</sup> This report was prepared by Mr James P. Love, the Director of the Taxpayer Assets Project, with the assistance of CBO analyst, Mr Mike O'Hanlon.

TABLE VIII. TOTAL QUANTIFIABLE COSTS OF WAR

(IN BILLIONS)				
COST CATEGORY	ENFORCEMENT OF ECONOMIC SANCTIONS	SCENARIO (1)	SCENARIO (2)	SCENARIO (3)
DIRECT COSTS OF DEPLOYMENT OR WAR	10	35	35	70
COSTS OF OCCUPATION	-	5	15	30
RECONSTRUCTION AID	-	5	5	7
AID TO OTHER COUNTRIES	5	5	15	25
ADDED SECURITY COSTS	-	1	2	4
OIL PRICES	21	15	19	22
NATURAL GAS PRICES	10	4	4	4
GNP LOSS	29	21	26	31
TOTAL	75	89	121	193
SCENARIO (1): LOW COST WAR ACCOMPANIED BY LOW WORLD POLITICAL TENSIONS AND SHORT OCCUPATION.				
SCENARIO (2): LOW COST WAR ACCOMPANIED BY INCREASED WORLD POLITICAL TENSIONS AND DIFFICULT OCCUPATION.				
SCENARIO (3): HIGH COST WAR ACCOMPANIED BY GREATER WORLD POLITICAL TENSIONS AND VERY DIFFICULT OCCUPATION.				
Source: Taxpayers Assets Project Report, February 6, 1991, prepared by the Director, Mr Love with assistance from CBO.				

Included in the same report was an assessment of the war's impact on the budget deficit within the framework of the

same three scenarios used to estimate total costs. Table IX provides these estimates. These estimates exclude foreign contributions, but include direct government costs plus loss of tax revenue due to the reduction in GNP caused by higher energy prices.

**TABLE IX. ESTIMATED IMPACT OF WAR COSTS ON DEFICIT**

(IN BILLIONS)	
SPECIFIC SCENARIO	INCREASE IN DEFICIT
ECONOMIC SANCTIONS	33
(1) LOW COST WAR ACCOMPANIED BY LOW WORLD POLITICAL TENSIONS AND SHORT OCCUPATION	77
(2) LOW COST WAR ACCOMPANIED BY INCREASED WORLD POLITICAL TENSIONS AND DIFFICULT OCCUPATION	100
(3) HIGH COST WAR ACCOMPANIED BY GREATER WORLD POLITICAL TENSIONS AND VERY DIFFICULT OCCUPATION	163
Source: Taxpayers Assets Project Report, February 6, 1991, prepared by the Director, Mr Love with assistance from CBO.	

These cost estimates only provide a rough estimate of future expenses for a particular scenario. However, they show that there will be an impact on the deficit. Foreign contributions will only offset some of the total incremental costs (i.e., DoD direct incremental costs). Whether these



costs are as significant as the costs that would have been incurred if the U.S. had elected to not enter the war is unknown.

### **3. Budget Deficit - Beyond 1991**

Near-term costs were not the only issue surrounding the war. There were also concerns over the future costs of the war voiced by CBO, GAO, and Congress. These additional future costs that were unclear now could impact the future federal deficit.

In February, 1991, CBO presented testimony to Congress expressing concerns over postwar policy costs, such as maintaining U.S. military forces in the Gulf and reconstruction and aid for Gulf countries.[Ref. 12:pp. 16-24] For example, the U.S. has historically provided substantial aid to war-damaged countries. The figure below depicts the economic assistance provided to countries following conflicts involving the U.S. and is based on a report by the Taxpayers Assets Project Report discussed earlier.

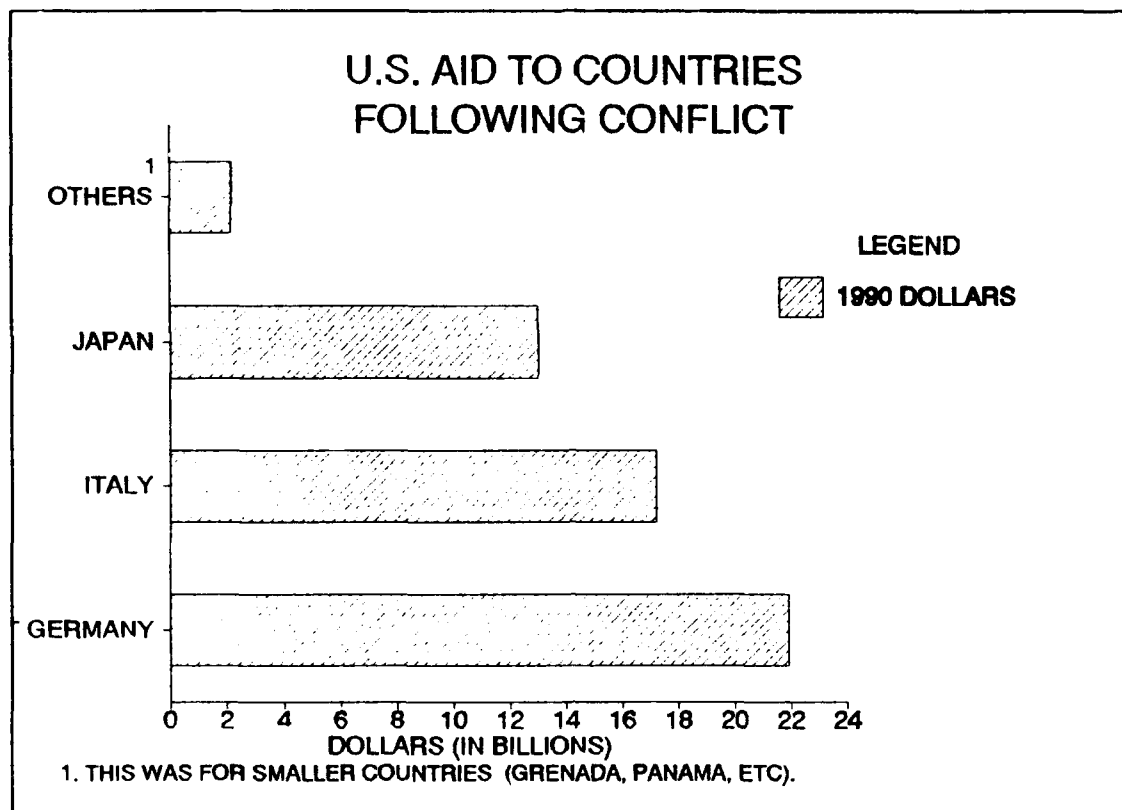


Figure 5 - History of U.S. Postwar Aid

However, there is reason to believe that U.S. reconstruction aid may be more limited in this instance. In the case of Iraq, Congress specifically stipulated that any assistance to Iraq would only be provided if Saddam Hussein were no longer in power. [Ref. 49:p. 23] Also, this conflict is unique because many countries involved have valuable oil resources. They can provide assistance to other less fortunate nations affected by the war, reducing reliance on the U.S. for economic support.

Another area of postwar policy debate centers on the costs of maintaining U.S. forces in the gulf. Not only will

there be continued costs to maintain forces in the region, but the requirement to maintain these forces may limit planned reductions in military personnel. If this occurs, then there are additional costs which will impact the defense budget and the deficit.

Although the postwar policies required to ensure stability in the region are unclear at this time, there will be some additional costs. Whether these costs affect future budget deficits will depend on the extent of these costs and whether future federal budgets and DoD budgets can accommodate them.

The unique economic status of many of the frontline countries involved, and their apparent intentions to assist less fortunate frontline states, indicate that there may be little impact on the U.S. budget deficit. This, coupled with a resurgence of the U.S. economy, may minimize deficit spending.

In testimony in February, CBO stated that there may be a small increase in the 1992 federal deficit and that the war should not interfere with the sharp decline in federal deficits expected after 1992.[Ref. 12:p. 15] However, while DS/DS may not impact future deficits, a recent report by CBO estimates that earlier projected declines in the federal deficit will not be as sharp as predicted.[Ref. 50:p. 1] In fact, recent estimates project the deficit to be large and to continue through fiscal year 2001, with the smallest expected

deficit to be \$189 billion in FY 1995, growing to \$313 billion in FY 2001. This estimate assumes that discretionary spending will remain within the limits established in the BEA through FY 1995. If however, these discretionary spending caps are removed without any compensating restrictions, it is projected the deficit would reach its lowest level in FY 1992, at about \$236 billion, and could climb to \$418 billion by FY 2001.

## **B. FUTURE IMPLICATIONS OF DS/DS**

### **1. Political Implications**

The new world order has survived its first challenge. While this may lead to an optimistic picture of the future world environment, it must be framed within the context of the reality of this particular conflict. Saddam Hussein was the ideal man to test the new world resolve. With the universal perception of an immoral dictator destroying an unprotected neighbor, it was easier to rally forces to oppose this aggressive behavior.

Will future regional conflicts support such a strong collection of world opinion and resolve? While this will ultimately be answered over time, there are important political implications for U.S. policy abroad and for the U.S. defense budget in general.

This conflict may not be typical, and in fact was probably atypical. However, the funding of U.S. war costs by other nations poses special considerations for future foreign

policy. While many countries offered assistance, both cash contributions and in-kind assistance, some restrictions were placed on using the donations. For example, Japan requested that their contributions be earmarked for transportation, but not for combat forces.[Ref. 28:p. 10] While this was impractical to implement during DS/DS it presents interesting questions for the future. Will the U.S. allow caveats to be placed on contributions. If not, will Allies be reluctant to provide cash and instead contribute more in-kind assistance?

Another political question facing the U.S. concerns the future participation and cooperation by U.N. members. For example, the U.S. was able to rally U.N. support for this conflict. If U.N. support does not continue in the future, will the U.S. conduct its policy despite U.N. apathy, or will U.N. apathy dictate U.S. national security policy?

Apparent changes in burden sharing attitudes of allied countries are also important. Have precedents been set for determining responsibility sharing levels in future conflicts? What costs are appropriate for determining the portion of the burden each country has born? While these future implications are important, they are beyond the scope of this thesis.<sup>18</sup>

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<sup>18</sup> For further discussion of these issues, see "Cost Estimation for Desert Shield/Desert Storm - A Burden Sharing Viewpoint", by LT Brian Hinkley, Masters Thesis, Naval Postgraduate School, December 1991.

## 2. Defense Budget Implications

There are numerous political implications that warrant significant study. However, one issue is particularly relevant for this thesis. This issue involves the appropriate cost measures to use in trade-offs regarding future budgetary decisions over force structure and posture.

DS/DS has provided an opportunity to evaluate, test, and operate current combat systems on the battlefield. The lessons learned are significant and will better prepare our military forces for any future conflicts. These lessons learned point out future directions for the defense budget. Already there are efforts to capture these lessons learned and include them in budget decisions.[Ref. 49:p. 11] As stated during testimony to the House Budget Committee prior to the war:

The relatively short-term accounting exercise of segregation of the costs of Operation Desert Shield from other normal DoD operations should not obscure the longer-term issues raised by the crisis in the Gulf and the U.S. deployment.[Ref. 15:p. 11]

This war has emphasized the need to prepare for regional conflicts. Military forces must be light, mobile, lethal and fully trained to conduct operations worldwide. The conflict suggests that future conflicts will be "come as you are wars." [Ref. 51:p. 4] Executing this policy requires that whatever forces are deployed to the area must not be

"hollow forces" and cannot rely on time to develop into the force required.

While DoD is attempting to develop these forces, there are hard decisions currently being made on defense budgets, realizing that the impact of these decisions will only be tested in time. Issues associated with lift, manpower, stock levels, hardware and reserve-active force integration are being debated today as a result of the war. While this thesis will not discuss these issues, these decisions do highlight that as budgets are reduced, incremental cost estimation or marginal cost concepts will be involved in making trade-offs in the defense budget.

#### **C. FUTURE OF FUNDING MECHANISMS USED IN DS/DS**

There were unique funding mechanisms and innovative actions taken during DS/DS. Following is a discussion with regard to future feasibility of these actions.

##### **1. Feed and Forage Act**

Although the Act was initially created in 1861, it provided the flexibility to continue critical operations while awaiting supplemental funding. However, Congress was concerned over the lack of oversight in the decision to invoke the Act. GAO budget analysts indicated that there was some sentiment to revise the Act to reflect more modern forces' needs and requirements. For example, the Act could be

specifically updated to provide a list of those items that fall under the Act.

However, in view of the strict definition (Appendix C) used by DoD in invoking the Act, this revision does not seem to be necessary. The Act, as it stands now, provides the flexibility needed to support operations. Any revision could lead to less flexibility and increased congressional oversight.

## 2. Funding Account Structure

Another unique procedure used during DS/DS was the fund account structure established to receive foreign contributions. This account, DCA, provided a solution to ensure foreign funding of DoD required accounts. The DCA account structure and oversight involved appeared to have convinced foreign contributors that only appropriate military costs were funded out of their contributions. While SECDEF and the administration did not receive the control of funds they desired, DCA in conjunction with the "bridge loan" account (Persian Gulf Regional Defense Fund) did ensure that funding was available for DoD accounts as required.

With the changes in world cooperation and the continued threat of regional instability in various parts of the world, these account structures may be used again. In view of this, these accounts must provide adequate oversight to reassure contributors of our ability to manage funding.



### 3. In-Kind Assistance

Another unique exercise involved the valuation of in-kind assistance. This proved to be a very difficult task for DoD resource managers. Highlighting these difficulties was the lack of standardized reporting on in-kind assistance. Additionally, the ability to estimate the donating country's cost of providing assistance was very difficult. However, in order to recognize the offsetting reduction in U.S. incremental spending and cost-avoidance, these estimates are required.

It would be easier from a budgeting perspective to collect the contributions in cash and thereby have some baseline to measure different countries' contributions. However, the value of in-kind assistance can create flexibility not available in cash contributions. In the Persian Gulf, the availability of fuel was a great benefit for allied forces as it eased the logistical pipeline that would have been required if the fuel was not available.

In-kind assistance also has political advantages. It allows countries to donate resources while avoiding the political difficulties of the formal allocation process which usually accompanies cash contributions. There are political disadvantages as well. If the donating country specifies the value of the material or assistance, it is difficult to disagree with their estimate or conduct an audit of their cost system.

While there were concerns with some estimated values of in-kind assistance, the information in the monthly cost reports appears to be adequate. However, these reports provided postwar information. In future conflicts where in-kind assistance is substantial, earlier more accurate reports may be required to meet concerns voiced by GAO, CBO, and Congress. In view of this, the development of standardized reports on in-kind assistance could be created to provide the details of the in-kind assistance and still protect the sensitivities involved with releasing the information publicly. Efforts to develop these procedures could be jointly conducted by GAO and OSD. While this procedure may aid in ensuring that the incremental costs of future conflicts capture the offsetting value of in-kind assistance, there are still the inherent problems in exact value determination discussed above.

#### **4. Monthly Cost Reports**

The last area to discuss is the unique monthly cost reports requested by Congress. While the format initially seemed awkward and required manipulation of current accessible information, the reports provided a clearer picture of actual costs and those estimated costs developed to date. They also provided a corresponding picture of foreign commitments and the degree to which these commitments had been fulfilled.

While OMB is providing the reports as requested, there is the opportunity to modify these reports to better match current accounting systems and ease the reporting efforts. This review may be controversial at this time, in view of the congressional concern for incremental costs driving the reports. However, it might be advantageous to revise the report and submit an example of this revised report with one of the normal reports prior to the last report in November 1992. This would allow congressional review and development of an approved report that better supported the accounting system for any similar circumstance in the future.

Presented within the cost reports was the actual incremental cost data and expected future incremental costs in each category. As discussed earlier, there was concern over whether DoD's accounting system could accurately estimate these costs. There were also inferences on the advantages of the unit costing initiatives for these purposes.[Ref. 38] However, it appears that unit costing may develop the average cost of the item and not reflect marginal costs. Therefore, this system may not necessarily enhance incremental cost estimation for budgetary requirements. This topic would be an ideal subject for a separate thesis study.

## VII. CONCLUSION

From the data presented in this thesis, it appears that foreign commitments for cash contributions will cover DoD funding requirements for DS/DS. Total foreign commitments are \$48.3 billion, with \$42.5 billion collected as of September 11, 1991. Total DoD estimated funding requirements are \$47.1 billion. Adding the \$400 million in funding required by the Department of State, Education, and Veterans Affairs, brings the total funding requirement to \$47.5 billion, \$800 million below foreign commitments. While total incremental costs to DoD may reach \$61.1 billion<sup>19</sup>, actual DoD funding requirements of \$47.1 billion should be covered by foreign contributions. Of the \$15 billion appropriated for the Persian Gulf Regional Defense Fund, only \$320.5 million will be required. These funds will support the Kurdish relief effort. As discussed throughout this thesis, there were significant issues beyond determining the bottom line costs of the war that impacted and influenced the cost estimating

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<sup>19</sup> This figure represents the \$47.1 billion costs of DS/DS plus the following: \$2.1 billion from FY 1990 appropriation for the war, \$1.2 billion in costs of items not to be replaced by DoD, \$1.0 billion in costs to be absorbed by internal realignment, \$3.9 billion in present value of long-term personnel benefits not affecting near-term funding requirements, and \$5.8 billion in in-kind assistance which will not result in expenditures by the U.S.

methodology. These issues include: defining incremental costs, estimating incremental costs, and creating the account structure to collect and monitor funding for the war.

#### **A. DEFINING THE APPROPRIATE COST MEASURE**

At the onset of the crisis, costs were primarily developed to determine the additional funding requirements created by involvement in the crisis. Clearly, U.S. decisions on levels of involvement and policy are not based on these cost estimates. However, our democratic process dictates awareness.

As world opinion became clear and U.S. resolve was maintained, these cost estimates began to serve another purpose. World financial support for U.S. defense expenses increased, requiring cost estimates to support requested funding from other countries. As a result, these cost estimates served dual purposes: to measure the additional budget requirements for defense and to measure the U.S. contribution to the war effort.

These opposing requirements led to the debates over incremental costs versus total incremental costs.[Ref. 12:pp. 4-5] For example, DoD total incremental costs include the value of all equipment and munitions expended in DS/DS, even resources DoD does not expect to replace. In contrast, the incremental cost to support the DoD DS/DS funding requirements

would exclude costs associated with the non-replaceable equipment and munitions.

With the budget reduction legislation enacted at the beginning of the crisis, the incremental cost of the war was critical. As mandated in legislative language, only incremental costs were to be included in emergent budgetary requirements. These costs should reflect only those to be absorbed by U.S. taxpayers. Defined narrowly, these would include only costs of military operations not covered by allied contributions and the cost of foreign assistance resulting from the crisis. These emergent costs are exempted from caps on defense and international affairs spending established in the Budget Enforcement Act of 1990.[Ref. 21:p. 3]

This was a significant challenge for DoD. The military departments were not required to determine how much it cost to conduct the operation. Rather, they were required to determine how much the cost of the operation exceeded their normal operating costs. This defined the concept of marginalism. Therefore, the incremental cost estimates provided by DoD to support budgetary requirements reflected the marginal cost. While there were difficulties in application, the concepts associated with marginalism applied.

Should marginal cost also support burden sharing measurements of contribution? While it appears from this discussion that marginal cost should be estimated to measure

the U.S. contribution, burden sharing cost estimates should reflect total incremental costs and not the budgetary incremental cost. Thus, there are disparate underlying principles for budgetary and burden sharing cost estimates.

While the appropriate incremental costs were collected for DS/DS from a budgetary viewpoint, there are different costs for different purposes. If the cost estimates were to be developed to present the total incremental costs of the war, then items such as debt relief and future previously unplanned economic aid should also be included. However, there are differing opinions on how much these items would actually add to the cost of the war. For example, the cost of debt relief to Egypt might be substantially less than the \$7 billion monetary value of the debt forgiveness, considering the anticipated default status of that loan. However, even without the inclusion of debt relief, U.S. postwar policies could significantly add to the incremental cost of the war and thus impact future budgets.

#### **B. ABILITY OF DoD TO ESTIMATE COSTS**

DS/DS provided a detailed examination of DoD's definition of and ability to forecast incremental costs. The costs that were eventually reported for funding requirements are supported by the economic concept involved with marginalism. While there were difficulties in estimating these costs, the underlying concepts of marginalism were appropriately applied

for funding requirements. Although the initial estimates may have lacked clarity of definition, as time passed the cost estimation methodology was refined and more accurately reflected incremental costs. The concepts used to produce these estimates will continue to be critical in defense spending in light of future budget reductions.

In developing these cost estimates, the military departments clearly had difficulty capturing these incremental costs. Total costs involved in the operation were reported at the unit level, but the offsetting cost reduction also available at this level was often omitted. For example, total unit costs should be reduced by the costs saved from exercises canceled in other parts of the world. These cost savings were recognized at higher levels, but only in aggregate terms. This made it difficult to determine whether specific costs had been properly charged to the operation at the unit level. This was not unexpected in view of the accounting system in place for the military departments. This system captures total obligations, but is unable to capture incremental costs unless the information is manually extracted. This shortcoming was recognized from within DoD early in the conflict and is continually reemphasized in GAO and CBO reports.

A separate topic associated with the cost estimates was the initial tendency to compare estimated costs with the costs of earlier conflicts. While these comparisons may have provided some initial concept of how much a possible war could



cost, more often inappropriate conclusions were drawn. The Persian Gulf War indeed may have unexpectedly cost more than Vietnam, on an average daily operating basis, but the conflicts involved different strategies, tactics, and equipment.

A more comparable type conflict appeared to be the 1973 Arab-Israeli War. In comparison, this war provides a fairly reasonable estimate of the costs of war in this region. In fact, while comparisons to Vietnam placed doubt on the cost estimates prepared by DoD, comparison to the 1973 Arab-Israeli War indicated the costs were reasonable. Any attempt to determine reasonableness of costs should be based upon careful analysis and recognition of limitations.

#### **C. EFFECTIVENESS OF UNIQUE LEGISLATIVE MECHANISMS**

The war has also allowed the development and evaluation of various funding mechanisms and unique funding structures, which may or may not be useful in future conflicts. The first was using the Feed and Forage Act to ensure the continued operations of Armed Forces prior to the obtainment of additional funding. Established during the Civil War, the Act still provides flexibility for DoD forces to continue operations while awaiting additional funding. Although there were concerns in Congress concerning the Act, the strict definition adhered to by DoD appears to have dispelled these concerns.

Another innovative legislative process during the war was establishing an unique account structure for DS/DS and the procedures to transfer funds between accounts. The initial account established for foreign contributions was based on the National Defense Conditional Gift Fund. While this account provided for contributions for defense, the Treasury department was responsible for ensuring funds were dispersed according to the intent of the donor. The Defense Cooperation Account replaced the National Defense Conditional Gift Fund and authority over the account was transferred from the Secretary of Treasury to SECDEF. However, the requirement for Congress to appropriate funds from this account prior to DoD use ensured normal control over the use of funds. While this control may have seemed inflexible to SECDEF, it convinced contributors of our ability to correctly manage funds for DS/DS. This type of accounting structure may very well be called upon again in future conflicts where allied countries help offset U.S. costs.

The last item to discuss within the legislative process, and perhaps the most subtle, was including the authorizing committees in the review of supplemental funding requests. Normally the supplemental requests would only be reviewed and authorized by the appropriating committees. During DS/DS, the supplemental requests were in fact reviewed by both authorization and appropriation committees. This may have set a precedent for future supplemental requests. Although not

disruptive or time consuming in this instance, the possibilities for both are very real in the future. In view of this added review, it may very well be prudent to maintain an emergency mechanism to overobligate funds, such as the Feed and Forage Act, to ensure the ability to execute operations if there are delays in the supplemental appropriation process.

#### **D. RECOMMENDATIONS FOR FURTHER STUDY**

While lessons learned are being developed for military tactics, weapons, and strategy based on the Persian Gulf war, it is equally important to develop lessons learned on cost estimate methodologies.

The first area to warrant further study is the efforts associated with the valuation of in-kind assistance and the lack of standardized reporting of this assistance. Clearly, budgetary cost estimates require knowledge of offsetting reductions available from in-kind assistance. However, it is not critical, from a budgetary viewpoint, to have an accurate valuation of what it cost the donating country to provide that assistance. Rather, it is important to estimate the U.S. cost avoidance as a result of receiving in-kind assistance. In view of this, it would be worthwhile to conduct a joint review involving OSD, GAO, and CBO, into the reporting format desired for in-kind assistance. This is particularly important in view of possible U.S. involvement in future regional conflicts

outside of wealthy areas such as the Persian Gulf. In these other areas, cash contributions may be more limited.

Another area warranting study is the monthly cost reports produced by OMB/DoD. While these reports meet congressionally mandated requirements for more accurate timely reporting, are these ideal cost report formats? The specific categories for reporting costs were stipulated by Congress. Are there more practical formats that match Service accounting systems and reduce the manual extraction of information? In view of the requirement to continue these reports until November of 1992, the opportunity exists to explore various formats and obtain congressional support for these changes. Then a basic format more consistent with DoD accounting systems would be available if future events require similar reports.

The last area for further study is associated with recent DoD initiatives to develop more cost conscious managers within DoD. Specifically, the area of concern is the unit costing initiative. There appears to be some misunderstanding of whether unit costing could provide better incremental cost estimates. Unit costing may in fact provide average cost information, which will not automatically provide more reliable incremental cost estimates. The misconception of what unit costing will provide, and the specific application to cost estimates developed during DS/DS, would make an ideal follow-up study. These are but a few of the major areas that warrant further research.

**APPENDIX A: SIGNIFICANT FUNDING EVENTS AND LEGISLATIVE HISTORY OF  
OPERATION DESERT SHIELD/DESERT STORM**

CHRONOLOGY - 1990

August 2 - President Bush announces new strategy introducing the new world order at the Aspen Institute.

August 2 - Iraqi Army invades Kuwait.

August 2 - President Bush issues Executive Orders 12722 and 12723, stopping all trade between Iraq and the United States, freezing Iraqi and Kuwaiti assets in the United States, and banning Iraqi ships and planes from landing at U.S. ports.

August 2 - Congress passes H.R. 5431, banning all trade with Iraq, stopping all foreign assistance to Iraq, and opposing international financial institution loans to Iraq.

August 2 - Senate passes S.Res. 318, urging the President to seek international cooperation in applying sanctions against Iraq.

August 6 - Saudi Arabia requests United States assistance and deployment of U.S. forces in country.

August 8 - President Bush announces the first dispatch of military units to the Persian Gulf.

August 9 - Troops from the 82nd Airborne Division arrive in Saudi Arabia.

August 11 - 24th Infantry Division (Mechanized) departs U.S. for the Persian Gulf by fast sealift ship.

August 12 - United States begins a naval interdiction program to enforce the trade embargo.

August 15 - Secretary of Defense (SECDEF) briefs President Bush on Desert Shield costs.

August 21 - The Western European Union (WEU)<sup>1</sup> elects to coordinate its dispatch of naval forces to enforce the blockade against Iraq but these forces will remain under their respective national commands.

August 22 - President Bush signs Executive Order 12727 authorizing SECDEF and Department of Transportation (Coast Guard) to order reserve units and individual reservists of the Selected Reserve to active duty.

August 23 - SECDEF calls 48,800 reservists to active duty under section 637b of Title 10, U.S.C. and Executive Order 12727. Authorized personnel call-up will be limited as follows: USA-25,000, USN-6,300, USMC-3,000, USAF-14,500.

August 24 - SECDEF invokes 3732 (41 U.S.C. 11) Feed and Forage Act of 1861 to obligate funds through the remainder of FY 1990 for certain military needs in the Persian Gulf in advance of appropriations.

August 24 - Comptroller notifies Congressional leadership of SECDEF decision to invoke 3732 (41 U.S.C. 11), as required by law.

August 24 - U.N. Security Council approves Resolution 655, authorizes the use of "such measures commensurate to the specific circumstances as may be necessary ... to halt all inward and outward maritime shipping" to enforce the trade embargo against Iraq.

August 25 - Army Reserve units activated.

August 29 - 24th Infantry Division (Mechanized) arrives in Saudi Arabia.

September 6 - SECDEF transmits request for \$1,888.5 million in FY 1990 supplemental appropriation to the Office of Management and Budget (OMB) and stipulates that incremental costs for the operation in 1990 total \$2,716 million; some of the costs were offset by deferring and canceling lower priority requirements per appropriation and transfer of funds.

September 6 - SECDEF invokes Section 2201(c) of Title 10 authorizing the incurring of deficiencies for the costs of any additional armed service members.

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<sup>1</sup>. WEU is comprised of 9 European countries: United Kingdom, France, Belgium, Netherlands, Italy, Germany, Spain, Luxembourg, and Portugal.

September 7 - Military Reserve units deploy.

September 7 - Department of Defense (DoD) estimates the incremental costs of Operation Desert Shield at \$2.716 billion for FY 1990 and \$15 billion for FY 1991.

September 7 - Congressional Budget Office (CBO) estimates the incremental costs of Desert Shield for 1990 to be \$2.2 billion and estimate the costs for FY 1991 at \$7.56 billion.

September 10 - Comptroller notifies Congressional leadership of SECDEF decision to invoke Section 2201 of Title 10.

September 11 - SECDEF testifies before the Senate Armed Services Committee (SASC) on Operation Desert Shield.

September 14 - President Bush transmits to Congress an FY 1990 Supplemental Appropriations request for Desert Shield which included:

- request for the appropriation of \$2 billion to cover the additional costs of Desert Shield in FY 1990.
- authority to cancel Egypt's \$6.7 billion military debt to the U.S. in recognition of their support in the Iraq-Kuwait crisis.

September 19 - SECDEF designates the Arabian Peninsula for imminent danger pay.

September 19 - SECDEF testifies before the House Appropriation Committee (HAC) on Operation Desert Shield.

September 19 - Representative Les Aspin, Chairman of the House Armed Services Committee (HASC) offers amendment to the FY 1991 Defense Authorization Act to include recommendation of \$1 billion for:

- correction of military pay anomalies.
- increased funds for programs useful in Desert Shield-type contingencies of the future.
- congressional authorization of foreign funds contributed to Desert Shield.
- a sense of Congress language that some combat reserves should be mobilized.

October 1 - H. J. Res 655, P.L. 101-403, the first continuing resolution for FY 1991, is signed into law with the following provisions:

- appropriation of \$2,018,664,000 for Desert Shield expenses in FY 1990.
- authority for DoD to transfer an additional \$75,037,000 from other DoD accounts into accounts used for Desert Shield.
- authority for SECDEF to accept contributions from foreign nations or individuals to offset the costs of Desert Shield and establishment of the Defense Cooperation Account (DCA) at the Treasury into which these funds were to be deposited.
- stipulation that the funds from the DCA to DoD would have to be authorized and appropriated by Congress.
- delay of the default deadline for Egypt's \$6.7 billion military debt to the U.S. until December 31, 1990.

October 1 - House passes H.J.Res. 658 supporting the President's August 7 deployment of U.S. armed forces to defend Saudi Arabia.

October 2 - Senate passes S.Con.Res. 147 that approved the President's actions in the United Nations and calls for international support of the sanctions against Iraq.

October 4 - SECDEF transmits FY 1991 Supplemental Appropriations request to OMB.

October 22 - Comptroller transmits report on cash contributions to defense oversight committees.

October 26 - H.R. 4739, P.L. 101-510, FY 1991 Defense Authorization Act is passed by Congress with the following provisions:

- authorized the funds that previously had been appropriated in the first continuing resolution for FY 1991, P.L. 101-403 (\$2 billion for FY 90 and the transfer of \$75 million within DoD accounts).
- authorized an additional \$1 billion for Desert Shield related expenses for FY 1991.

October 27 - H.R. 5114, P.L. 101-513, Foreign Operations Appropriations is signed into law including section 586 which institutes economic sanctions against Iraq although sanctions were already in place through Executive Orders 12722 and 12723 issued Aug 2.



November 5 - H.R. 5803, P.L. 101-511, The Department of Defense Appropriation Act, FY 1991, is signed into law with the following provisions:

- appropriation of \$1 billion from Defense Cooperation Account to DoD, earlier authorized in H.R. 4739, October 26.
- amended section 637b of Title 10, U.S.C., allowing Selected Reserves combat units ordered to active duty in support of operations in and around the Arabian Peninsula and Operation Desert Shield to be extended beyond the required initial maximum period of 90 days service to 180 days and likewise to extend the maximum period of any additional service from 90 to 180 days for FY 1991.

November 5 - H.R. 5114, P.L. 101-513, Foreign Operations Appropriations Act, is signed into law with the following provisions:

- requires the President to assemble a conference on the Egypt debt situation, determine the real value of this debt and report that to Congress, and if in the best interest of national security to cancel the debt.
- provides Israel \$700 million of excess military equipment to be removed from Europe.
- added \$100 million worth of equipment to the already existing \$100 million defense stockpile in Israel (to which Israel has access in emergencies).
- disburses Israel's \$1.8 billion in Foreign Military Sales grants in the first month of the fiscal year, to invest the money in U.S. Treasury bonds, with the proceeds to go to Israel.

November 5 - H.R. 5835, Omnibus Budget Reconciliation Act (OBRA) of 1990 is signed into law. Included in the Act are the following provisions:

- Title 13 of OBRA was the Budget Enforcement Act (BEA) of 1990 which specifies the incremental costs of military operations in the Middle East are exempt from the spending limits on defense and that funds for these operations would be provided through emergency appropriations and do not effect spending caps. Also Egyptian military debt relief and contributions to the International Monetary Fund (IMF) are also exempt from spending caps.
- implements the five-year deficit reduction agreement.

November 8 - President Bush announces his intention to increase the number of U.S. Armed Forces personnel in the Persian Gulf region from 200,000 to 400,000. This provides the allies the option of offensive military action if needed.

November 13 - CBO releases an updated cost estimate, taking into account the planned additional personnel to be deployed, and projects the incremental cost of Desert Shield to be \$12.1 billion for FY 1991.

November 13 - President issues Executive Order 12733 authorizing extension of active duty call-up personnel for selected reserves from 90 to 180 days, pursuant to the FY 1991 Defense Appropriation Act (P.L. 101-511).

November 14 - SECDEF, pursuant to 673b of Title 10, U.S.C. and Executive Orders 12727 and 12733, increases reserve call-up limits to USA-80,000, USN-10,000, USMC-15,000, USAF-20,000.

November 29 - United Nations Security Council approves Resolution 678 authorizing Member-states to use whatever means necessary to force an Iraqi withdrawal after January 15, 1991.

December 1 - Comptroller transmits report on cash contributions to Defense oversight committees.

December 1 - SECDEF, pursuant to 673b of Title 10, U.S.C. and Executive Orders 12727 and 12733, increases limits on reserve call-ups: USA-115,000, USN-30,000, USMC-23,000, USAF-20,000.

December 7 - Saddam Hussein releases all foreign hostages.

December 21 - Comptroller notifies Congress of intent to transfer \$1 billion from the Defense Cooperation Account as appropriated in P.L. 101-511.

December 27 - 300,000 U.S. personnel deployed to Persian Gulf area (180,000 Army, 35,000 Air Force, 35,000 Navy, 50,000 Marines). The Joint Arab Islamic Force deployed to the area totalled between 83,000-104,000, joining Saudi Arabia's 65,000 active military strength and 17,000 personnel from the Gulf Cooperation Council countries.

December 31 - The DCA current balance stands at \$4.3 billion with \$15.9 million interest income generated. \$1 billion had been withdrawn for DoD since establishment of the account. Total cash received from foreign contributions in the DCA was \$4.560 billion and in-kind assistance received to date stood at \$1.3 billion.

## CHRONOLOGY - 1991

January 3 - Pentagon announces 325,000 U.S. military personnel have been deployed to Gulf area for Operation Desert Shield.

January 9 - U. S. Secretary of State Baker meets with Iraqi Foreign Minister.

January 12 - Congress approves H.Con.Res. 32, reaffirming that Congress had the Constitutional authority to declare war and that offensive action against Iraq must be approved by Congress.

January 12 - House of Representatives approves H.J.Res. 77 authorizing the President to use military force providing the President certifies to Congress that diplomatic efforts to resolve the crisis have failed. Also, the Senate passes S.J.Res. 2 authorizing the use of force providing the President certifies diplomacy has failed to resolve the crisis. Since H.J.Res. 77 was similar, the Senate agreed to substitute H.J.Res. 77 for S.J.Res. 2 and forwarded it to the White House for signature.

January 14 - President Bush signs P.L. 102-1 authorizing the use of armed force to expel Iraq from Kuwait per conditions specified in H.J.Res. 77.

January 15 - Deadline for Iraq to leave Kuwait passes.

January 16 - President Bush submits to Congress a written certification, as called for in P.L. 102-1, that peaceful and diplomatic means has failed to resolve the crisis.

January 16 - 7 p.m. EST, the Air phase of Operation Desert Storm begins.

January 17 - Senate passes S.Con.Res. 2, which commended President Bush for his actions as Commander-in-Chief and states Congress' support for the men and women of the U.S. Armed Forces. The House concurred with and passed this resolution on January 18.

January 21 - President Bush issues Executive Order designating Arabian Peninsula a combat zone.

February 1 - Total U.S. deployment to Persian Gulf Region reaches 430,000.

February 4 - President releases FY 1992/FY 1993 budget request containing a \$30 billion "place holder" for FY 1991 costs of Operation Desert Shield.

February 6 - Secretary Atwood designates Egypt, Israel, Jordan, Syria and Turkey for imminent danger pay.

February 12 - SECDEF invokes 3732 (41 U.S.C. 11, Feed and Forage Act) and Section 2201(c) of Title 10, which is the intent to obligate funds through the remainder of FY 1991 for certain military needs in advance of appropriations and authorizing the incurring of deficiencies for the costs of any such additional armed service members respectively.

February 12 - SECDEF forwards the first FY 1991 Supplemental request to OMB.

February 13 - Comptroller notifies congressional leadership of SECDEF decision to invoke 3732 (41 U.S.C. 11) and 2201(c) of Title 10.

February 22 - President transmits to the Congress the first FY 1991 Supplemental Appropriation request for Desert Storm/Desert Shield costs. Included in the proposal are the following:

- request for \$42.6 billion for DS costs for FY 1991.
- request for \$15 billion in budget authority to establish and fund a new account called the Desert Shield Working Capital Account. The funds in this account would be available for transfer to SECDEF, with the approval of OMB, in order to maintain continuity of payment for the incremental costs of war. If funds were required from this account, the incoming funds into the DCA would replenish the funds withdrawn. An initial \$15 billion in U.S. funds is recommended to be placed in this account.
- request for SECDEF authority, with OMB concurrence, to transfer funds from the DCA account to reimburse defense appropriation accounts depleted by the incremental costs of the war.
- request that Congress formally appropriate for DoD the amount contributed to the DCA, with no specific amount of money indicated.

February 23 - Ground phase of Operation Desert Storm begins.

February 28 - Ground operations halt.

February 28 - DoD provides an updated estimate for the FY 1991 incremental costs of Desert Shield/Desert Storm at \$39.2 billion.

April 3 - United Nations Security Council approves Resolution 687 and includes the following provisions:

- Iraq to recognize the Iraqi-Kuwait border agreement of 1963.
- U.N. to establish peace observer group to ensure the border is maintained between Kuwait and Iraq.
- Iraq and U.N. to destroy Iraqi's chemical, biological, and nuclear weapons facilities and its ballistic missiles.

April 6 - S. 725, P.L. 102-25, Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991, is signed into law with the following provisions:

- requirement that the administration submit more detailed, monthly reports on incremental expenses actually incurred by DoD for DS/DS and the amount of foreign contributions made to the U.S. in support of DS/DS.
- personnel benefits packages including the increased imminent danger pay and monthly separation pay.
- requirement that DoD withhold from non-paying pledging nations payments that would otherwise be made as reimbursements for indirect-hire foreign nationals working at U.S. installations abroad, though SECDEF may waive this provision.
- requirement for an interim report on the conduct of the Persian Gulf Conflict be submitted to Congress by July 1, 1991, and a final report by January 15, 1992.

April 10 - H.R. 1282, P.L. 102-28, Operation Desert Shield/Desert Storm Supplemental Appropriations Act, 1991, is signed into law with the following provisions:

- establishment of a new account (Persian Gulf Regional Defense Fund) in which \$15 billion of U.S. funds were appropriated to serve as a "bridge gap" loan if foreign contributions in the DCA were unable to meet appropriated DoD requirements. DoD may draw on this account only to the extent that funds are not available in the DCA.
- appropriation of \$42,625,822,000 for Operation Desert Shield/Desert Storm FY 1991.
- prohibition of new arms sales to those nations not fulfilling commitments made to the U.S. during the Persian Gulf crisis.
- authority for SECDEF to draw funds from DCA once they have been authorized and appropriated. SECDEF must inform Congress at least seven days prior to executing transfer of funds.

April 10 - Comptroller notifies congressional leadership of intent to transfer \$28.1 billion from Defense Cooperation Account and \$3.7 billion from Persian Gulf Regional Defense Fund to DoD accounts to meet previously appropriated requirements of \$42.6 billion specified in the first supplemental bill.

April 10 - H.R. 1281, P.L. 102-27, Dire Emergency Supplemental Appropriations is signed into law with the following provisions:

- \$655 million in expanded personnel and veterans benefits considered to represent incremental costs of DS/DS to be funded from the DCA.
- \$650 million in emergency aid to Israel and \$200 million in emergency aid to Turkey.

April 20 - OMB provides the first monthly cost report to Congress as required by Section 401 of P.L. 102-25.

April 25 - President Bush submits supplemental request to aid refugees from DS/DS.

May 6 - Comptroller notifies Congress of the transfer of \$27.1 billion from Defense Cooperation Account to DoD accounts.

June 13 - H.R. 2251, P.L. 102-55, The Dire Emergency Supplemental Appropriations From Contributions of Foreign Governments and/or Interest for Humanitarian Assistance to Refugees and Displaced Persons In and Around Iraq as a Result of the Recent Invasion of Kuwait and for Peacekeeping Activities and Other Urgent Needs Act of 1991, is signed into law with the following provisions:

- making dire emergency supplemental appropriations from contributions of foreign governments in the Persian Gulf Regional Defense Fund and/or from interest in the DCA.
- funds are for humanitarian assistance to refugees and displaced persons in and around Iraq as a result of the recent invasion of Kuwait and for peacekeeping activities, and for other urgent needs for FY 1991.

July 9 - President transmits to Congress the second FY 1991 Supplemental Defense Appropriation request for Desert Storm/Desert Shield. Included in the proposal are the following:

- request for an additional \$2.949 billion for incremental costs of operation for FY 1991.
- request to transfer \$6.573 billion of the initial \$42.6 billion, appropriated in P.L. 102-28, the Operation Desert Shield/Desert Storm Supplemental Appropriations Act, 1991, to FY 1992 accounts for which funding was originally provided. This transfer of funds was primarily due to under funding of personnel and operations and maintenance accounts.
- updated estimate of possible total incremental cost of operation at \$61.1 billion.

**APPENDIX B: COST ESTIMATE METHODOLOGY USED BY CBO**

## APPENDIX. METHODS USED TO ESTIMATE ADDED COSTS OF A WAR

The Congressional Budget Office based its assessment of the added costs of a war on forecasts by various experts of the characteristics of a war. This appendix discusses these forecasts and the methods used to translate wartime characteristics into costs.

### FORECASTS OF THE CHARACTERISTICS OF A WAR

The estimates of wartime characteristics shown in Table A-1 reflect the forecasts made by military analysts working independently and at research institutions and universities, as well as forecasts contained in press reports purporting to represent Pentagon estimates. These forecasts are based on widely differing assumptions about the nature of a Persian Gulf war. All of the estimates assume that the United States would have to attack on the ground as well as in the air, but they differed about the duration of the ground attacks (from brief to protracted) and on their scope.<sup>1</sup> Most analysts assumed that ground attacks would be confined to Kuwait and nearby portions of Iraq. The analysts at the Center for Defense Information, however, assumed that the allies would wage a land campaign against Baghdad.

### TRANSLATING CHARACTERISTICS INTO COSTS

CBO estimated all costs in 1991 dollars of budget authority using various estimating methods, depending on the category of costs. The details for each category are shown in Table A-2.

Military personnel costs were estimated based on numbers of personnel and average costs per person. Estimates assumed that some of the personnel reductions in the active-duty force planned for 1991 would be postponed. The lower estimate assumed postponement of half the reduction, which required funding for about 20,000 additional man-years in 1991; the higher estimate assumed postponement of all of the reductions, requiring funding for 40,000 additional man-years in 1991. The lower estimate assumed a buildup to about 150,000 reserves by the middle of fiscal year 1991, followed by a reduction to

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1. Trevor Dupuy argued that the allies could perhaps prevail against Iraq relying only on an air attack. The assumption of an air-only war was, however, in only one of twelve scenarios for war considered by Dupuy. None of the other military analysts assumed an air-only war. Therefore, all of CBO's estimates assume some ground combat.



TABLE A-1. PUBLIC ESTIMATES OF CHARACTERISTICS OF AIR-GROUND WAR

Source	Length	Casualties (Thousands)	Tanks Lost	Tactical Aircraft Lost	Heli- copters Lost
Epstein <sup>a</sup>	Weeks of combat	3 to 16	200 to 900	300 to 600	75 to 250
Posen <sup>b</sup>	Weeks	4 to 11	n.a.	n.a.	n.a.
Dupuy <sup>c</sup>	10 to 40 days	7 to 17	200 to 600	190 to 315	50 to 250
Press Reports on DoD/Intelligence Projections <sup>d</sup>	Months	10 to 30	n.a.	n.a.	n.a.
Other Press Reports <sup>e</sup>	n.a.	Up to 16	200	100 to 300	n.a.
Center for Defense Information <sup>f</sup>	Months	40 to 45	n.a.	n.a.	n.a.

SOURCE: Congressional Budget Office based on forecasts cited in notes a through f.

NOTE: All figures apply to U.S. forces only; n.a. = not available.

- a. Information from Joshua M. Epstein, Brookings Institution, "War with Iraq: What Price Victory?" Briefing to the Office of the Joint Chiefs of Staff, Washington, D.C., December 19, 1990. Epstein may revise his numbers somewhat in the future. CBO estimated equipment losses by assuming that 75 percent of the total attrition derived by Epstein's calculations would result in the permanent loss of equipment. The other attrition, not reflected in the above numbers, would result from wear and tear during wartime that would render some equipment unusable for the duration of hostilities and that would require extensive repair—but not new procurement—after hostilities were completed.
- b. Barry R. Posen, "Political Objectives and Military Options in the Persian Gulf," Defense and Arms Control Studies Working Paper, Massachusetts Institute of Technology, Cambridge, Mass. (November 1990), pp. 24-25.
- c. Trevor N. Dupuy, Colonel, U.S. Army, Retired, Attrition: Forecasting Battle Casualties and Equipment Losses in Modern War (Fairfax, Va.: Hero Books, December 1990), pp. 94-103, 128-132; and If War Comes: How to Defeat Saddam Hussein (Fairfax, Va.: Hero Books, 1991), page proofs, p. 104. CBO estimated tank and helicopter losses by extrapolating from Dupuy's historical data. In the latter book, and in Congressional testimony, Dupuy also considers the possibility of an air campaign that produces victory for the coalition with fewer than 1,000 U.S. casualties. In keeping with its focus on air-ground scenarios, however, CBO did not investigate this case further.
- d. Rick Atkinson and George C. Wilson, "Land War: Centerpiece of Strategy," Washington Post, December 8, 1990, p. A1; Patrick E. Tyler, "Iraq's Aim: High Toll for G.I.'s," New York Times, November 27, 1990, p. 16; Bruce W. Nelson, "Ready for Action," Time, November 12, 1990, p. 26.
- e. George J. Church, "If War Begins," Time, December 10, 1990, p. 28.
- f. Center for Defense Information, "U.S. Invasion of Iraq: Appraising the Options," The Defense Monitor, vol. 19, no. 8 (Washington, D.C., 1990).

**TABLE A-2. DETAILS OF CBO ESTIMATES OF COSTS OF WAR**  
(Costs in billions of constant 1991 dollars of budget authority)

Case	Assumptions	Total Added Cost
<b>Added Military Personnel Costs</b>		
Lower	Build to 150,000 Reserves, Reduce to 30,000 by End of Fiscal Year 1991	3.1
	Postpone Half of 1991 Personnel Cuts (40,000 People)	1.4
	400,000 Receive Hostile Fire Pay for 3/4 Fiscal Year, \$110/Month	<u>0.4</u>
	Total	4.9
Higher	Build to 150,000 Reserves and Hold That Level Throughout Fiscal Year 1991	4.8
	Postpone All 1991 Personnel Cuts (80,000 People)	2.8
	400,000 Receive Hostile Fire Pay for Entire Fiscal Year	<u>0.5</u>
	Total	8.1
<b>Added Operation and Maintenance Costs</b>		
Lower	Weeks of Intensive Combat, 3,000 U.S. Casualties	1.0
Higher	Months of Variable Combat, 45,000 U.S. Casualties	15.0
<b>Replacement Costs of Major Weapons</b>		
Lower	100 Tactical Aircraft at \$25 Million Each (F-15/F-16 Mix)	2.5
	Two-thirds of a Division (200 Tanks) at \$3.0 Billion per Division (Heavy M1 Division)	<u>2.0</u>
	Total	4.5
Higher	600 Aircraft at \$25 Million Each	15.0
	3 Divisions (900 Tanks) at \$3.0 Billion Each	9.0
	5 Ships at \$0.75 Billion Each	<u>3.8</u>
	Total	27.8
<b>Replacement Costs of Missiles and Ammunition</b>		
Lower	Aircraft Attack Ground Targets for 15 Days at 1 Sortie/Day, Using 15,000 Missiles at \$100,000 Each	1.5
	Army and Marine Corps Ground Forces Fight for 15 Days at Half the Intensity Assumed for Europe	3.0
	Air Force and Navy Aircraft Use 2 Missiles per Iraqi Aircraft, Against 200 Aircraft	0.1
	Navy Shoots at About 250 Targets, 2 Munitions Each	<u>0.4</u>
	Total	5.0

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TABLE A-2. Continued

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Replacement Costs of Missiles and Ammunition (Continued)		
Higher	Aircraft Attack at Variable Rates Over Long Period, Using 30,000 Missiles	3.0
	Army and Marine Corps Fight at Full Intensity for 30 Days, or Lower Intensity Over Longer Period	12.0
	Air Force and Navy Use 5 Missiles per Iraqi Aircraft, Against 500 Aircraft	0.8
	Navy Shoots at 375 Targets, 4 Munitions Each	<u>1.2</u>
	Total	17.0
Added Costs of Medical Care		
Lower	3,000 Casualties (600 Killed, 2,400 Wounded), for Immediate Care	0.1
	3,000 Casualties, for Care and Compensation Beyond Fiscal Year 1991	<u>0.1</u>
	Total	0.2
Higher	45,000 Casualties (7,800 Killed, 37,200 Wounded), for Immediate Care	2.2
	45,000 Casualties, for Care and Compensation Beyond Fiscal Year 1991	<u>1.6</u>
	Total	3.8
Basic Support Costs		
Lower	Costs of Negotiated Settlement (Less Personnel Costs Included Elsewhere)	12.0
Higher	Lower Estimate Plus Net Cost of Maintaining 400,000 Troops Throughout 1991	14.0

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SOURCE: Congressional Budget Office.

NOTE: Details may not add to totals because of rounding.

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about 30,000 reserves by year's end. The higher estimate assumed the same buildup but no reduction. The estimates assumed that 400,000 U.S. military personnel would draw hostile fire pay either for three-quarters of the fiscal year (lower estimate) or for the entire fiscal year (higher estimate).

Several methods were used in estimating wartime operation and maintenance (O&M) costs. The primary method was based on the U.S. experience in Vietnam. CBO used DoD estimates of the added O&M costs during the Vietnam War, adjusted to 1991 dollars but reduced to eliminate the added O&M costs associated with the larger number of personnel serving in the military during the Vietnam War.<sup>2</sup> The resulting figure was divided by the number of casualties during the Vietnam War, which provided an adjustment for the duration and intensity of the conflict. The ratio of cost to casualties was adjusted upward in real terms by 3 percent a year through fiscal year 1991 to reflect higher operating costs associated with today's more complex equipment. (The 3 percent figure is based on the approximate growth in O&M per active-duty person experienced between the 1960s and 1990.) The resulting annual factors were averaged for each year of the Vietnam War. The resulting average factor of about \$350,000 for each casualty was used in estimating O&M costs under this method.

The results using this method are broadly consistent with estimates using other approaches. For example, estimates seem roughly consistent with costs incurred during the Korean War. Indeed, although available data regarding costs of the Korean War are more limited than data for Vietnam, they suggest that the cost per casualty may have been somewhat higher during the Korean War—perhaps one-quarter to one-half higher—than costs experienced during the Vietnam War. Another method for estimating added wartime operating costs—the use of models that estimate the costs associated with increases in the tempo of operations that would occur during a war—was also employed as a check. CBO had detailed models available only for the Air Force and had to extrapolate to estimate costs for ground forces. Using this method, CBO estimated that doubling or even tripling the normal peacetime tempo of operations in theater would yield added operations cost ranging between \$1

---

2 In estimating the added costs of the Vietnam war, DoD apparently included the extra O&M expenses for all personnel added to the military after 1964. Thus, some of the added O&M costs for Vietnam resulted not from the higher intensity of combat operations, but from the costs of having more personnel employed in the military. Because the United States apparently would fight a Persian Gulf war without adding new military personnel, CBO subtracted the added Vietnam O&M costs associated with a larger military before using the numbers to assess the costs of a Persian Gulf war.

billion and \$3 billion for each month of intensive combat. These results seem broadly consistent with the results obtained using data from the Vietnam War.

Costs to replace equipment were derived from military analysts' estimates of equipment losses. Tank losses were translated into armored division-equivalents by dividing by about 300 tanks. For each division-equivalent that was lost, CBO assumed replacement costs of \$3 billion. This figure is intended to capture the costs of replacing not only tanks but also helicopters and associated equipment that might be lost during ground combat (but not the costs of munitions and spare parts, which are included in other cost categories). Each fixed-wing tactical aircraft that was lost was assumed to cost \$25 million—roughly the cost of replacement with the mix of today's versions of the A-10, F-16, F-15, F/A-18, and other aircraft that are in the Persian Gulf. For the higher cost estimate only, CBO assumed the loss of five ships, each costing an average of \$750 million to replace. Although none of the military analysts addressed ship losses, such losses seem possible, particularly if the war featured a major amphibious assault.

Replacement costs for munitions (missiles and ammunition) could not be estimated directly from the experts' forecasts because none of them explicitly addressed munitions use. CBO's estimate assumed heavy use of munitions, consistent with the assumption that a Persian Gulf war would be intense. For ground weapons, CBO assumed munitions were either consumed for 15 days at half the daily rate of usage for a major European war (in the lower cost estimate) or for the equivalent of 30 to 60 days at daily usage rates equal to between half the European rate and the full European rate (in the higher estimate). Air-to-ground usage was assumed to be equivalent to 15,000 missiles at the average cost of a Maverick missile (in the lower estimate) or 30,000 such missiles (in the higher estimate). Attacking aircraft were assumed to use 400 air-to-air missiles—assumed to cost about \$0.3 million each—in the lower estimate (based on 2 missiles for each of 200 Iraqi aircraft) and 2,500 such missiles in the higher estimate (based on 5 missiles for each of 500 Iraqi aircraft). Finally, the Navy was assumed to shoot between 500 ship-to-surface missiles (lower estimate) and 1,500 such missiles (higher estimate).

Added costs of medical care would include costs for long-term treatment of casualties in U.S. hospitals, costs for the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) brought about by heavy use of military hospitals by injured military personnel, and costs of disability retirement (which would affect the budget of the Department of Veterans Affairs). Cost estimates for medical care were based on peacetime experience as well as experience in the Vietnam and Korean wars.

Finally, basic support costs include operation and maintenance costs for U.S. troops in the absence of hostilities (these costs are included because the method used to estimate wartime operating costs measures only the added costs of maintaining a wartime tempo) as well as costs that would be incurred before and after a war. For the lower estimate, these basic support costs are assumed to equal the costs of a negotiated settlement less reserve costs that were included in a preceding cost category. Thus, basic support costs in the lower estimate include costs to move an additional 200,000 troops to the Persian Gulf and to move some troops home. The higher estimate of basic support costs also includes funds to move troops home (though these costs would probably be incurred in years beyond 1991) plus operation and maintenance costs to maintain all 400,000 troops in the Persian Gulf throughout 1991.

#### Estimating 1991 Budget Authority

Assumptions about what portion of total added costs would result in increased 1991 budget authority vary by cost category. For some categories, the allocation to 1991 or the years beyond seems clear. Most added costs for military personnel, and for basic support, are assumed to result in increases in 1991 budget authority. All costs of disability retirement are also assumed to be incurred beyond 1991.

For other cost categories, CBO made assumptions that seem reasonable but, as the text notes, are uncertain. Roughly three-quarters of the total costs for operation and maintenance and for medical care (excluding costs of disability retirement) are assumed to be authorized in 1991. If, as is assumed, the war started in early 1991, DoD would probably place orders for replacement supplies reasonably quickly. But only one-quarter of the costs for replacement of munitions are assumed to be authorized in 1991 because of the time that would probably be required to assess inventories and make decisions about how many munitions are to be bought. None of the extra budget authority for weapons is assumed to be incurred in 1991 because time will probably be needed to make decisions about what weapons (if any) to replace.

## APPENDIX C: FEED AND FORAGE ACT

Section 3732 is a limited stop-gap measure which authorizes the military component to incur new obligations for specific purposes in excess of appropriations available. It is the policy of the Department to limit the use of this authority to emergency circumstances; when immediate action is imperative and such action cannot be delayed long enough to obtain supplemental funds. It enables incurring obligations on a deficiency basis for clothing, subsistence, forage, fuel, quarters and medical and hospital supplies. Specific application to the Military Personnel and Operation and Maintenance appropriations follow:

*Military Personnel Appropriations* - Includes clothing and clothing allowance, subsistence, and PCS. Excludes basic pay, incentive pay, special pay, pro pay, reenlistment bonus, station allowance overseas, separation payments, family separation allowance, BAQ, BAS for officers, and uniform allowance for officers.

*Operation and Maintenance Appropriations.* - Fuel: Includes gasoline, diesel fuel, kerosene, coal, fuel oil, gas or other fuels used in vehicles, boats, aircraft, for stationary engines, or for production of utilities.

*Medical and Hospital Supplies:* Includes drugs, medicines, medical instruments, protective clothing, liens, medical equipment, hospital beds and other hospital supplies.

*Transportation:* Includes movement of persons or property by commercial or government facilities; maintenance and repair of vehicles, aircraft and boats of all types; operation of ports, terminal facilities, motor pools.

*Clothing:* Includes organization clothing and equipment worn by the individual.

SOURCE: Hearing before the Committee on the Budget, House of Representatives, "Defense Budget Overview for Fiscal Year 1992," February 21, 1991.

**APPENDIX D: EXAMPLE OF OMB MONTHLY COST REPORT**





EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF MANAGEMENT AND BUDGET  
WASHINGTON, D.C. 20503

THE DIRECTOR

September 16, 1991

Honorable J. Danforth Quayle  
President of the Senate  
Washington, D.C. 20510

Dear Mr. President:

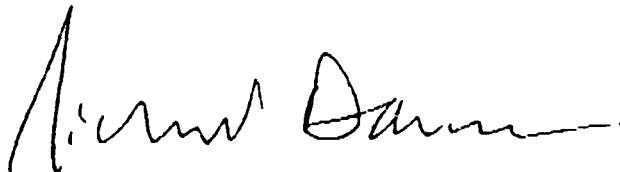
Enclosed is the eventh report on United States Costs in the Persian Gulf Conflict and Foreign Contributions to Offset Such Costs, as required by Section 401 of P.L. 102-25. This report was prepared in consultation with the Secretary of Defense, the Secretary of State, the Secretary of the Treasury, and other appropriate government officials. Previous reports have covered the costs and contributions for the period beginning August 1, 1990, and ending on June 30, 1991, for costs, and July 31, 1991, for contributions.

In accord with the legal requirement, this report provides the following information:

- o the incremental costs associated with Operation Desert Storm that were incurred during July 1991;
- o the cumulative total of such costs, by fiscal year, from August 1, 1990, to July 31, 1991;
- o the costs that are nonrecurring costs, offset by in-kind contributions, or offset by the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict;
- o the allocation of costs among the military departments, the Defense Agencies of the Department of Defense, and the Office of the Secretary of Defense by category -- airlift, sealift, personnel, personnel support, operating support, fuel, procurement, and military construction; and
- o the amount of contributions made to the United States by each foreign country during August 1991, as well as the cumulative total of such contributions. The report specifies the amount of cash payments pledged and received, provides a description and value of in-kind contributions pledged and received, and identifies restrictions on the use of such contributions.

The costs reported to this point should be viewed as partial and preliminary for reasons noted in the enclosure. As required by Section 401 of P.L. 102-25, an eighth report will be submitted by October 15th. In accord with the legal requirement, it will cover incremental costs associated with Operation Desert Storm that were incurred in August 1991, and foreign contributions for September 1991. Subsequent reports will be submitted by the 15th day of each month, as required, and will revise preliminary reports to reflect additional cost estimates or reestimates.

Respectfully submitted,



Richard Darman  
Director

Enclosure

IDENTICAL LETTER SENT TO HONORABLE THOMAS S. FOLEY

COPIES TO: HONORABLE ROBERT C. BYRD, HONORABLE MARK O. HATFIELD,  
HONORABLE JAMIE L. WHITTEN, HONORABLE JOSEPH M. MCDADE,  
HONORABLE DANIEL K. INOUE, HONORABLE TED STEVENS,  
HONORABLE JOHN P. MURTHA, HONORABLE SAM NUNN,  
HONORABLE JOHN W. WARNER, HONORABLE LES ASPIN,  
HONORABLE WILLIAM L. DICKINSON, HONORABLE JIM SASSER,  
HONORABLE PETE V. DOMENICI, HONORABLE LEON E. PANETTA,  
AND HONORABLE WILLIS D. GRADISON, JR.

UNITED STATES COSTS IN THE PERSIAN GULF CONFLICT AND  
FOREIGN CONTRIBUTIONS TO OFFSET SUCH COSTS

Report #7: September 15, 1991

Section 401 of P.L. 102-25 requires a series of reports on incremental costs associated with Operation Desert Storm and on foreign contributions to offset such costs. This is the seventh of such reports. As required by Section 401 of P.L. 102-25, it covers costs incurred during July 1991 and contributions made during August 1991. Previous reports have covered the costs and contributions for the period beginning August 1, 1990, and ending on June 30, 1991, for costs, and July 31, 1991, for contributions.

Costs

The costs covered in this and subsequent reports are full incremental costs of Operation Desert Storm. These are additional costs resulting directly from the Persian Gulf crisis (i.e., costs that would not otherwise have been incurred). It should be noted that only a portion of full incremental costs are included in Defense supplemental appropriations. These portions are costs that require financing in fiscal year 1991 or fiscal year 1992 and that are exempt from statutory Defense budget ceilings. Not included in fiscal year 1991 or fiscal year 1992 appropriations are items of full incremental costs such as August-September 1990 costs and costs covered by in-kind contributions from allies.

Table 1 summarizes preliminary estimates of Department of Defense full incremental costs associated with Operation Desert Storm from August 1, 1990, through July 31, 1991. The cost information is shown by the cost and financing categories specified in Section 401 of P.L. 102-25. Tables 2-9 provide more detailed information by cost category. Costs shown in this report were developed by the Department of Defense and are based on the most recent data available.

Through July 1991, costs of \$45.3 billion were reported by the Department of Defense. The costs reported so far are preliminary. This report includes an estimate of costs identified to date of equipment repair, rehabilitation, and maintenance caused by the high operating rates and combat use. The report also includes some of the costs of phasedown of operations and the return home of the deployed forces.

While a substantial portion of the costs have been reported, incremental costs are being and will continue to be incurred in subsequent months. These include equipment repair, rehabilitation, and restoration that have not so far been identified, long-term benefit and disability costs, and the costs of continuing operations in the region. About 42,000 military

personnel were in the region at the end of July, and approximately 28,000 reservists were still on active duty at that time. Significant progress has been made in returning equipment from Southwest Asia; however, considerable amounts of materiel, equipment, ammunition and vehicles still had not been shipped from the area at the end of July. Materiel still in theater includes some large, heavy pieces of equipment which are costly and time consuming to prepare and transport. Combat aircraft continue to fly in the region and the U.S. forces will continue to remain in the region until all parties are satisfied with long term security arrangements. The costs through July plus the other costs not yet reported are expected by the Department of Defense to result in total incremental costs of over \$61 billion.

Incremental Coast Guard costs of \$6 million were incurred during this reporting period, with cumulative costs of \$34 million through July to support military operations in the Persian Gulf.

#### Contributions

Section 401 of P.L. 102-25 requires that this report include the amount of each country's contribution during the period covered by the report, as well as the cumulative total of such contributions. Cash and in-kind contributions pledged and received are to be specified.

Tables 10 and 11 list foreign contributions pledged in 1990 and 1991, respectively, and amounts received in August. Cash and in-kind contributions are separately specified.

As of September 11, 1991, foreign countries contributed \$8.0 billion of the \$9.7 billion pledged in calendar year 1990, and \$39.9 billion of the \$44.2 billion pledged in calendar year 1991. Of the total \$48.0 billion received, \$42.5 billion was in cash and \$5.5 billion was in-kind assistance (including food, fuel, water, building materials, transportation, and support equipment). Table 12 provides further details on in-kind contributions.

Table 13 summarizes the current status of commitments and contributions received through September 12, 1991.

### Future Reports

As required by Section 401 of P.L. 102-25, the next report will be submitted by October 15th. In accord with the legal requirement, it will cover incremental costs associated with Operation Desert Storm that were incurred in August 1991, and foreign contributions for September 1991. Subsequent reports will be submitted by the 15th day of each month, as required, and will revise preliminary reports to reflect additional costs as they are estimated or re-estimated.

### List of Tables

- Table 1 - Summary, Incremental Costs Associated with Operation Desert Storm
- Table 2 - Airlift, Incremental Costs Associated with Operation Desert Storm
- Table 3 - Sealift, Incremental Costs Associated with Operation Desert Storm
- Table 4 - Personnel, Incremental Costs Associated with Operation Desert Storm
- Table 5 - Personnel Support, Incremental Costs Associated with Operation Desert Storm
- Table 6 - Operating Support, Incremental Costs Associated with Operation Desert Storm
- Table 7 - Fuel, Incremental Costs Associated with Operation Desert Storm
- Table 8 - Procurement, Incremental Costs Associated with Operation Desert Storm
- Table 9 - Military Construction, Incremental Costs Associated with Operation Desert Storm
- Table 10 - Foreign Contributions Pledged in 1990 to Offset U.S. Costs
- Table 11 - Foreign Contributions Pledged in 1991 to Offset U.S. Costs
- Table 12 - Description of In-kind Assistance Received to Offset U.S. Costs as of August 31, 1991
- Table 13 - Foreign Contributions Pledged in 1990 and 1991 to Offset U.S. Costs Commitments and Receipts through September 12, 1991

Table 1  
SUMMARY 1/

**INCREMENTAL COSTS ASSOCIATED WITH OPERATION DESERT STORM**  
Incurred by the Department of Defense  
From August 1, 1990 Through July 31, 1991  
(\$ in millions)

Preliminary Estimates

	<u>FY 1990</u>	<u>FY 1991</u>			Partial and Preliminary Aug 1990 - July 1991
	Aug - Sep	Oct - June	This period July	Total through July	
(1) Airlift	412	2,303	38	2,341	2,753
(2) Sealift	235	3,474	39	3,513	3,748
(3) Personnel	223	4,946	228	5,174	5,397
(4) Personnel Support	352	5,340	228	5,569	5,920
(5) Operating Support	1,210	12,268	670	12,938	14,148
(6) Fuel	626	3,715	217	3,932	4,558
(7) Procurement	129	8,275	43	8,318	8,447
(8) Military Construction	11	355		355	366
<b>Total</b>	<b>3,197</b>	<b>40,676</b>	<b>1,463</b>	<b>42,139</b>	<b>45,336 2/</b>

Nonrecurring costs included above 3/	201	12,912	57	12,969	13,171
Costs offset by:					
In-kind contributions	225	5,113	116	5,229	6,454
Realignment 4/	913	116		116	1,029

1/ Data was compiled by OMB. Source of data -- Department of Defense. This report adjusts earlier estimates to reflect more complete accounting information.

2/ The costs reported so far are preliminary. This report includes an estimate of costs identified to date of equipment repair, rehabilitation, and maintenance caused by the high operating rates and combat use. Additional costs for these categories will be reported as more information becomes available. The report also includes some of the costs of phasedown of operations and the return home of the deployed forces. However, certain long-term benefit and disability costs have not been reflected in the estimates. Those costs will be reported in later reports. The costs through July plus the other costs not yet reported are expected by the Department of Defense to result in total incremental costs of slightly more than \$61 billion.

3/ Nonrecurring costs include investment costs associated with procurement and Military Construction, as well as other one-time costs such as the activation of the Ready Reserve Force ships.

4/ This includes the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict.

Table 2

AIRLIFT

## INCREMENTAL COSTS ASSOCIATED WITH OPERATION DESERT STORM

Incurred by the Department of Defense  
From August 1, 1990 Through July 31, 1991

(\$ in millions)

## Preliminary Estimates

	FY 1990	FY 1991			Partial and Preliminary Aug 1990 - July 1991
	Aug - Sep	Oct - June	This period July	Total through July	
<u>Airlift</u>					
Army	207	1,062		1,062	1,268
Navy	85	709	12	721	806
Air Force	114	504	26	530	645
Intelligence Agencies		1		1	1
Special Operations Command	6	28		28	33
<b>Total</b>	<b>412</b>	<b>2,303</b>	<b>38</b>	<b>2,341</b>	<b>2,753</b>

Nonrecurring costs Included above		986		986	986
Costs offset by:					
In-kind contributions	7	92	2	94	101
Realignment 1/	6				6

1/ This includes the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict.

This category includes costs related to the transportation by air of personnel, equipment and supplies.

The previous October-June estimate has been reduced by \$58 million due to a recategorization of certain costs to operating support.

During this period over 500 redeployment missions were flown, returning over 12,000 people and 8,000 short tons of cargo to the U.S. and Europe.

Table 3

SEALIFT

## INCREMENTAL COSTS ASSOCIATED WITH OPERATION DESERT STORM

Incurred by the Department of Defense  
From August 1, 1990 Through July 31, 1991  
(\$ in millions)

## Preliminary Estimates

	FY 1990	FY 1991			Partial and Preliminary Aug 1990 - July 1991
	Aug - Sep	Oct - June	This period July	Total through July	
<u>Sealift</u>					
Army	123	2,793	6	2,799	2,922
Navy	99	410	7	417	516
Air Force	12	256	25	281	293
Defense Logistics Agency		14		14	14
Special Operations Command	2	2		2	4
<b>Total</b>	<b>235</b>	<b>3,474</b>	<b>39</b>	<b>3,513</b>	<b>3,748</b>

Nonrecurring costs included above	57	1,100	2	1,102	1,159
Costs offset by:					
In-kind contributions	2	138	4	142	144
Realignment 1/	2				2

1/ This includes the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict.

This category includes costs related to the transportation by sea of personnel, equipment and supplies.

During this period a total of 57 ships (22 of them foreign flag ships) made redeployment deliveries. These vessels shipped over 350,000 short tons of dry cargo back to the U.S. and Europe.



Table 4  
**PERSONNEL**

**INCREMENTAL COSTS ASSOCIATED WITH OPERATION DESERT STORM**  
Incurred by the Department of Defense  
From August 1, 1990 Through July 31, 1991  
(\$ in millions)  
Preliminary Estimates

	FY 1990	FY 1991			Partial and Preliminary Aug 1990 - July 1991
	Aug - Sep	Oct - June	This period July	Total through July	
<b>Personnel</b>					
Army	126	2,993	115	3,108	3,233
Navy	22	1,082	54	1,136	1,158
Air Force	75	871	59	930	1,005
<b>Total</b>	<b>223</b>	<b>4,946</b>	<b>228</b>	<b>5,174</b>	<b>5,397</b>

Nonrecurring costs included above		45	45	45
Costs offset by:				
In-kind contributions				
Realignment 1/	15			15

1/ This includes the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict.

This category includes pay and allowances of members of the reserve components of the Armed Forces called or ordered to active duty and the increased pay and allowances of members of the regular components of the Armed Forces incurred because of deployment in connection with Operation Desert Storm.

The previous October-June estimate has been reduced by \$102 million due to a recalculation of Air Force reserve costs.

At the end of July about 28,000 Reservists were still on active duty and about 42,000 people were still in theater.

Table 5

PERSONNEL SUPPORT

## INCREMENTAL COSTS ASSOCIATED WITH OPERATION DESERT STORM

Incurred by the Department of Defense  
From August 1, 1990 Through July 31, 1991  
(\$ in millions)

Preliminary Estimates

	<u>FY 1990</u>	<u>FY 1991</u>			Partial and Preliminary Aug 1990 - July 1991
	Aug - Sep	Oct - June	This period July	Total through July	
<u>Personnel Support</u>					
Army	209	4,055	33	4,088	4,297
Navy	104	849	59	908	1,013
Air Force	24	389	134	523	546
Intelligence Agencies	2	9	0 1/	10	12
Defense Logistics Agency	12	16	1	16	28
Defense Mapping Agency		5	1	6	6
Special Operations Command	2	8	0 1/	8	9
Office of the Secretary of Defense		9	1	10	10
<b>Total</b>	<b>352</b>	<b>5,340</b>	<b>228</b>	<b>5,569</b>	<b>5,920</b>

Nonrecurring costs included above	4	1,230	12	1,242	1,246
Costs offset by:					
In-kind contributions	28	1,615	19	1,634	1,661
Realignment 2/	3				3

1/ Costs are less than \$500 thousand.

2/ This includes the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict.

This category includes subsistence, uniforms and medical costs.

In July major costs were for medical care and other personnel support.

**Table G**  
**OPERATING SUPPORT**

**INCREMENTAL COSTS ASSOCIATED WITH OPERATION DESERT STORM**

Incurred by the Department of Defense  
From August 1, 1990 Through July 31, 1991  
(\$ in millions)

Preliminary Estimates

	<u>FY 1990</u>	<u>FY 1991</u>			Partial and Preliminary Aug 1990 - July 1991
	Aug - Sep	Oct - June	This period July	Total through July	
<u>Operating Support</u>					
Army	896	6,909	558	7,467	8,363
Navy	223	3,131	21	3,152	3,375
Air Force	68	2,144	83	2,227	2,295
Intelligence Agencies		1	0 1/	1	1
Special Operations Command	15	29	7	35	51
Defense Communications Agency		1		1	1
Defense Mapping Agency	8	48	1	49	57
Defense Nuclear Agency		2	0 1/	2	2
Office of the Secretary of Defense		3		3	3
Total	1,210	12,268	670	12,938	14,148

Nonrecurring costs included above		922		922	922
Costs offset by:					
In-kind contributions	167	1,631	45	1,676	1,843
Realignment 2/	698	69		69	767

1/ Costs are less than \$500 thousand.

2/ This includes the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict.

This category includes equipment support costs, costs associated with increased operational tempo, spare parts, stock fund purchases, communications, and equipment maintenance.

The previous October-June estimate has been increased by \$143 million. This increase is for higher in-country operation costs.

Costs reported during this period were primarily for in-country operating costs.

Table 7

FUEL

## INCREMENTAL COSTS ASSOCIATED WITH OPERATION DESERT STORM

Incurred by the Department of Defense  
From August 1, 1990 Through July 31, 1991  
(\$ in millions)

## Preliminary Estimates

	FY 1990	FY 1991			Partial and Preliminary Aug 1990 - July 1991
	Aug - Sep	Oct - June	This period July	Total through July	
<u>Fuel</u>					
Army	10	148	16	164	174
Navy	19	1,134	98	1,232	1,251
Air Force	137	2,422	102	2,524	2,661
Special Operations Command		10	1	12	12
Defense Logistics Agency	460				460
<b>Total</b>	<b>626</b>	<b>3,715</b>	<b>217</b>	<b>3,932</b>	<b>4,558</b>

Nonrecurring costs included above					
Costs offset by:					
In-kind contributions	21	1,176	46	1,222	1,243
Realignment 1/	60				60

1/ This includes the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict.

This category includes the additional fuel required for higher operating tempo and for airlift and sealift transportation of personnel and equipment as well as for the higher prices for fuel during the period.

The previous October-June estimate has been decreased by \$212 million to reflect a credit for fuel which had been charged to Navy but which had in fact been provided as assistance-in-kind.

About 75 percent of the costs reported during this period were due to higher prices for fuel with the balance due to the higher operating tempo.

Table 8

PROCUREMENT

## INCREMENTAL COSTS ASSOCIATED WITH OPERATION DESERT STORM

Incurred by the Department of Defense  
From August 1, 1990 Through July 31, 1991  
(\$ in millions)

## Preliminary Estimates

	FY 1990	FY 1991			Partial and Preliminary Aug 1990 - July 1991
	Aug - Sep	Oct - June	This period July	Total through July	
<u>Procurement</u>					
Army	49	2,351	42	2,393	2,442
Navy	47	2,415		2,415	2,462
Air Force	32	3,372		3,372	3,404
Intelligence Agencies	1	12	1	13	13
Defense Communications Agency		0 1/		0	0 1/
Special Operations Command		99		99	99
Defense Logistics Agency		4		4	4
Defense Mapping Agency		1		1	1
Defense Nuclear Agency		0 1/		0	0 1/
Defense Systems Project Office		1		1	1
Office of the Secretary of Defense		21		21	21
<b>Total</b>	<b>129</b>	<b>8,275</b>	<b>43 1/</b>	<b>8,318</b>	<b>8,447</b>

Nonrecurring costs included above	129	8,275	43 1/	8,318	8,447
Costs offset by:					
In-kind contributions		124		124	124
Realignment 2/	119	47		47	165

1/ Costs are less than \$500 thousand.

2/ This includes the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict.

This category includes ammunition, weapon systems improvements and upgrades, and equipment purchases.

The previous October - June estimates have been decreased by \$21 million to reflect reestimates of equipment provided as assistance-in-kind.

The costs for July result primarily from the loss of Army combat vehicles during a fire at Doha, Kuwait on July 17th and finalization of Army contracts for purchase of special purpose equipment to facilitate operations in Southwest Asia.

Table 9

MILITARY CONSTRUCTION

## INCREMENTAL COSTS ASSOCIATED WITH OPERATION DESERT STORM

Incurred by the Department of Defense  
From August 1, 1990 Through July 31, 1991

(\$ in millions)

## Preliminary Estimates

	FY 1990	FY 1991		Partial and Preliminary Aug 1990 - July 1991
	Aug - Sep	Oct - June	This period July Total through July	
<u>Military Construction</u>				
Army	7	353	353	360
Navy				
Air Force	4	2	2	5
Total	11	355	355	366
Nonrecurring costs included above	11	355	355	366
Costs offset by:				
In-kind contributions		338	338	338
Realignment 1/	11			11

1/ This includes the realignment, reprogramming, or transfer of funds appropriated for activities unrelated to the Persian Gulf conflict.

This category includes the cost of constructing temporary billets for troops, and administrative and supply and maintenance facilities.

There was a decrease in the previously reported Army October-June costs due to a reestimate by CENTCOM of the value of assistance-in-kind contributions. There were no new costs reported in this category.

Table 10  
FOREIGN CONTRIBUTIONS PLEDGED IN 1990 TO OFFSET U.S. COSTS 1/  
(\$ in millions)

	Commitments			Receipts in August			Receipts through September 12, 1991			Future Receipts
	Cash	In-kind	Total	Cash	In-kind	Total	Cash	In-kind	Total	
GCC STATES	5,844	1,001	6,845				4,256	1,001	5,257	1,588
SAUDI ARABIA	2,474	865	3,339				886	865	1,751	1,588 2/
KUWAIT	2,500	6	2,506				2,500	6	2,506	
UAE	870	130	1,000				870	130	1,000	
GERMANY 3/	272	800	1,072				272	782	1,054	18 4/
JAPAN 3/	1,084	656	1,740	39		39	1,084	571	1,655	85 5/
KOREA	50	30	80				50	30	80	
BAHRAIN		1	1					1	1	
OMAN/QATAR		1	1					1	1	
DENMARK		1	1					1	1	
TOTAL	7,250	2,490	9,740	39		39	5,662	2,387	8,049	1,691

1/ Data was compiled by OMB. Sources of data: commitments -- Defense, State, and Treasury; cash received -- Treasury; receipts and value of in-kind assistance -- Defense.

2/ This is reimbursement for enroute transportation through December for the second deployment and for U.S. in-theater expenses for food, building materials, fuel, and support. Bills for reimbursement have been forwarded to Saudi Arabia.

3/ 1990 cash contributions were for transportation and associated costs.

4/ An accounting of in-kind assistance accepted by U.S. forces is under way. It is expected that this accounting will conclude that the German commitment has been fully met.

5/ Resolution of balance is under discussion and should be resolved shortly.

Table 11  
FOREIGN CONTRIBUTIONS PLEDGED IN 1991 TO OFFSET U.S. COSTS 1/  
(\$ in millions)

	Commitments 2/			Receipts in August			Receipts through September 12, 1991			Future Receipts
	Cash	In-kind	Total	Cash	In-kind	Total	Cash	In-kind	Total	
GCC STATES	27,017	3,071	30,088	1,215	57	1,272	22,856	3,071	25,927	4,161
SAUDI ARABIA	10,546	2,954	13,500	515	55	570	9,166	2,954	12,120	1,380
KUWAIT	13,471	30	13,500	700	2	702	10,690	30	10,720	2,781
UAE	3,000	88	3,088				3,000	88	3,088	
GERMANY	5,500		5,500				5,500		5,500	
JAPAN 3/	8,332		8,332				8,332		8,332	
KOREA	100	175	275		3	3	100	41	141	134
DENMARK		11	11		5	5		11	11	
LUXEMBOURG		6	6					6	6	
OTHER	4	2	6				4	2	6	
TOTAL	40,952	3,265	44,218	1,215	65	1,280	36,792	3,132	39,924	4,294

1/ Data was compiled by OMB. Sources of data: commitments -- Defense, State, and Treasury; cash received -- Treasury; receipts and value of in-kind assistance -- Defense.

2/ 1991 commitments in most instances did not distinguish between cash and in-kind. The commitment shown above reflects actual in-kind assistance received unless specific information is available.

3/ 1991 cash contributions are for logistics and related support.



Table 12  
DESCRIPTION OF IN-KIND ASSISTANCE RECEIVED  
TO OFFSET U.S. COSTS AS OF AUGUST 31, 1991  
(\$ in millions)

	Calendar Year 1990	Calendar Year 1991
SAUDI ARABIA ..... Host nation support including food, fuel, housing, building materials, transportation and port handling services.	865	2,954
KUWAIT ..... Transportation	6	30
UNITED ARAB EMIRATES ..... Fuel, food and water, security services, construction equipment and civilian labor.	130	88
GERMANY ..... Vehicles including cargo trucks, water trailers, buses and ambulances; generators; radios; portable showers; protective masks, and chemical sensing vehicles	782	
JAPAN ..... Construction and engineering support, vehicles, electronic data processing, telephone services, medical equipment, and transportation.	571	
KOREA ..... Transportation and replenishment stocks	30	41
BAHRAIN ..... Medical supplies, food and water	1	
OMAN/QATAR ..... Oil, telephones, food and water	1	
DENMARK ..... Transportation	1	11
LUXEMBOURG..... Transportation		6
OTHER ..... Transportation		2
<b>TOTAL</b>	<b>2,387</b>	<b>3,132</b>

Table 13

FOREIGN CONTRIBUTIONS PLEDGED IN 1990 AND 1991 TO OFFSET U.S. COSTS  
COMMITMENTS AND RECEIPTS THROUGH SEPTEMBER 12, 1991 1/  
(\$ in millions)

	Commitments			Receipts 2/			Future Receipts
	1990	1991	Total	Cash	In-kind	Total	
GCC STATES	<u>6,845</u>	<u>30,088</u>	<u>36,933</u>	<u>27,112</u>	<u>4,073</u>	<u>31,185</u>	<u>5,748</u>
SAUDI ARABIA	3,339	13,500	16,839	10,052	3,819	13,871	2,968
KUWAIT	2,506	13,500	16,006	13,190	36	13,226	2,781
UAE	1,000	3,088	4,088	3,870	218	4,088	
GERMANY	1,072	5,500	6,572	5,772	782	6,554	18 3/
JAPAN	1,740	8,332	10,072	9,416	571	9,987	85 4/
KOREA	80	275	355	150	71	221	134
OTHER	3	23	26	4	22	26	
TOTAL	<u>9,740</u>	<u>44,218</u>	<u>53,958</u>	<u>42,454</u>	<u>5,519</u>	<u>47,973</u>	<u>5,985</u>

1/ Data was compiled by OMB. Sources of data: commitments -- Defense, State, and Treasury; cash received -- Treasury; receipts and value of in-kind assistance -- Defense.

2/ Cash receipts are as of September 12, 1991. In-kind assistance is as of August 31, 1991.

3/ An accounting of in-kind assistance accepted by U.S. forces is under way. It is expected that this accounting will conclude that the German commitment has been fully met.

4/ Resolution of balance is under discussion and should be resolved shortly.

## APPENDIX E: DESCRIPTION OF IN-KIND ASSISTANCE

As of January 31, 1991 over \$2.7 billion of in-kind assistance has been provided by our allies.

By country the total support and examples of the types provided follows:

	(\$ in millions)
Saudi Arabia.....	1,556
host nation support including food, fuel, housing, building materials, transportation and port handling services.	
Germany.....	531
vehicles including cargo trucks, water trailers, buses and ambulances; generators, radios, portable showers and protective masks.	
Japan.....	457
construction and engineering support, vehicles, electronic data processing, telephone services, and medical equipment.	
United Arab Emirates.....	140
fuel, food and water, security services, construction equipment and civilian labor.	
Korea.....	21
transportation.	
Kuwait.....	10
transportation.	
Other.....	3
water, medical services, and transportation	
Total	2,728

By type of service or product the in-kind assistance received is as follows:

	(\$ in millions)
Fuel	836
Food/potable water	641
Vehicles	354
Construction	275
Equipment, facilities and services	214
Transportation	59
Electronic data processing	23
Warehouse facilities	28
Housing and utilities	59
Telephone and communications services	40
Utilities	13
Other (medical, airport services, security services; civilian labor, laundry, morale and welfare, and furniture).	

Total \$2,728

Under provisions of the 1991 Defense Appropriations Act, the value of assistance received is determined by the recipients along the following general guidelines:

Fuel. Price charged by the Defense Fuel Supply Center (e.g., \$1.05 per gallon for JP.4 jet fuel).

Water and food. Local market price.

Other Services.

- Contract cost if known.
- Price previously paid if DoD initially contracted for the service.
- Best estimate of cost at prevailing rates in Saudi Arabia.

Equipment.

- Contract cost if known.
- Value set by donating country, subject to Defense review.

SOURCE: TAKEN DIRECTLY FROM APPENDIX PROVIDED IN THE FIRST FY 1991 DEFENSE SUPPLEMENTAL APPROPRIATION REQUEST OF FEBRUARY 22, 1991.

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